Development of NarrateC by using
Knowledge Story Construction Process Framework

by

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ABSTRACT

This project proposes the usage of Knowledge Story Construction Process Framework and Knowledge Story Construction Process Model in knowledge capturing and sharing practices within IT & Media Services (ITMS) department in Universiti Teknologi PETRONAS. Since knowledge is an asset to an organization, preserving knowledge is the most important element to be focused on nowadays. This knowledge is tacit knowledge which lies on people's mind usually based on their experiences. Tacit knowledge is often transferred through stories and these knowledge stories are usually not structured and preserved. These stories are commonly based on procedural, declarative and episodic knowledge. The proposed framework and model aims to help repackage tacit knowledge into a more structured way so that the knowledge can be transferred effectively. The author has conducted data gathering and analysis on the knowledge sharing practices as well as the usage of Knowledge Story Construction Process Model within ITMS department. It is identified that storytelling is the most preferred way for knowledge sharing and the model is efficient for knowledge capture. The development of NarrateC (stands Narrative Constructor) which is a narrative construction application system is an initiative to preserve the knowledge as well as the platform for knowledge sharing. Knowledge Story Construction Process Model is implemented in the NarrateC to help the users in structuring their knowledge stories.

CHAPTER 1: INTRODUCTION

1.1 Background of study

Knowledge is often said to be the most powerful asset in an organisation. It is what determines performance which somehow leads to profitability of a company. Knowledge drives the development of a company towards success. The amount and quality of knowledge of an employee can measure the expertise level and this differentiates the position or standards in an organisation. Knowledge plays a big role in the industry and thus, no doubt it is the most powerful asset. Globalization leads to the increment of information technology and knowledge based work. This is where knowledge management is crucial to the industry.

In this decade, companies have developed a better strategy to protect this asset where they come out with systematic process of creating, capturing, sharing and using knowledge to achieve organizational goal. This is how knowledge sharing becomes essential in an organization.

Cummings (2003) mentions:

> *The study of knowledge sharing, which is the means by which an organization obtains access to its own and other organizations' knowledge, has emerged as a key research area from a broad and deep field of study on technology transfer and innovation, and more recently from the field of strategic management. (p. 1)*

Knowledge sharing has somehow played some parts of strategic management which its aim is to have a sustainable competitive advantage. However, there are challenges and limitations in sharing knowledge. One of the biggest challenges is when some people refuse to share their knowledge, fearing that others will be better than them. They are not aware of the importance of sharing knowledge which actually could help in achieving an organisation's goals.

Minority would have lack of trust when sharing knowledge, fearing that others will take advantage of that and may cause harm towards the sharing person especially in regards to work performance or threatening position level. Some would say they do not have time to share knowledge. These are all refusals.

Despite all the limitations, people do find the best technique to share knowledge. It is often said that narrative or storytelling has been the most effective way of sharing knowledge. This involves a face-to-face interaction or in a written format. One tells the story while the other listens. One writes the story and the other reads. This has been the quickest and effective way to transfer knowledge. This is because narrative is a distinctive form of human thinking, which makes a better acceptance of knowledge as people will strive to understand it.

Narrative usually used to share experienced knowledge stored in the long-term memory and chunked by episodes. It is a challenge to gather this knowledge and convert into stories. This is where Knowledge Story Construction Process Model is being introduced to help gathering and structuring this stories.

Sharing knowledge is one but preserving this knowledge is another. It is equally important that knowledge is being preserved because it is crucial to avoid knowledge bleed and brain drain. These two terms refer to something that is very useful is being wasted. The knowledge may bring miracles to a company but if it never being explored or used, something precious is being thrown.

This is where the idea of creating NarrateC came with the hope of a better platform to capture and share knowledge. Towards developing this system, Knowledge Story Construction Process Framework is being introduced to assist the development of the system.

1.2 Problem Statement

Tacit knowledge is often transferred through stories. Storytelling is one of the ways to maintain knowledge from one generation to another. However, these stories are mostly not captured and preserved. A story that is not captured is such a waste. For instance, if a person tells a story and no one listens to it, nothing is captured and transferred. It still lies in that particular person who has the knowledge and nothing is being shared.

Some stories are captured but not structured. It is important to capture and preserve a structured knowledge to ensure knowledge is transferred effectively. Knowledge stories are often difficult to understand as they are usually fragmented due to years of experience. It is a challenge to the experts in gathering all their knowledge on certain

matters and come out with a complete story. This may take longer time, often mixed up, and not interrelated between segments of stories.

People are still using the classic way for knowledge sharing practices. Usually they tell stories through face-to-face interaction. But to what extent that those stories are preserved? One person may transmit knowledge to another person but how long will the knowledge last especially if it is not being used and eventually forgotten.

1.3 Objectives

1.3.1 To study current techniques of capturing tacit knowledge within ITMS department.

1.3.2 To capture tacit knowledge and repackage into a narrative form with the assistance of a process framework.

1.3.3 To understand current knowledge sharing practices in ITMS department and their limitations.

1.3.4 To experiment the impact of knowledge story construction process framework and model in storytelling

1.3.5 To develop a Narrative Construction Application System as a platform for ITMS department to capture share knowledge.

1.4 Scope of Study

This project focuses on knowledge sharing practices within IT & Media Services (ITMS) Department in Universiti Teknologi PETRONAS. This department has been chosen because of close relations with Computer Information Science (CIS) department in terms of Information Technology (IT) aspect as this project falls under CIS department.

The types of knowledge that is being studied in this project are as follows:

- Procedural: This is knowledge of how to do a task or the understanding of how to carry out specific procedure.
- Declarative: This is a routine knowledge that is available in short-term memory and easily verbalized.
- Episodic: This is knowledge that is stored in long-term memory and chunked by episodes. It is experienced information.

All of these types of knowledge will be converted into stories with the assistance of Knowledge Story Construction Process Model and shared within the department. This is to identify limitations of storytelling and the feasibility of the model if using different types of knowledge. Knowledge Story Construction Process Framework is studied for the development of NarrateC. This framework is to guide the process of knowledge sharing within the department that begins from the knowledge source itself until the end result which is the usage of NarrateC.

1.5 Feasibility Study

Technical	There is a high familiarity in technical aspects and as ITMS department is basically from IT background. This technology or systems used will be able to match user's usability and meet requirements.
Operational	ITMS department normally experience the need of problem solving in their daily tasks. Thus, the requirement of having information is high.
Schedule	The duration to conduct this project is 8 months. This timeline is adequate to run this project. This project is divided into two parts to ensure better progress of the project. The first 4 months would be to study usage of framework while the other 4 months solely on developing the NarrateC.

CHAPTER 2: LITERATURE REVIEW

2.1 Understanding tacit knowledge

Michael Polanyi, a scientist turned philosopher pioneered the term "tacit knowledge". Tacit knowledge is fragmented and difficult to study. From the author's point of view, tacit can be defined as a type of knowledge that is not captured by language or mathematics.

According to Polanyi (1958):

> *Rules of art can be useful, but they do not determine the practice of an art; they are maxims which can serve as a guide to the art only if they can be integrated into the practical knowledge of the art. They cannot replace this knowledge. (p. 52).*

This explains that tacit knowledge is outside language, it is just what we have and we know we have. Language is mainly use to get information from each other. Information can be modified into different meanings through different forms (e.g. tone of voice, writing style, sign language, etc). Mathematics uses a similar structure eventhough having a different class of meanings. Tacit knowledge opposes these two forms as it is not encoded symbolically. This knowledge is required to be transmitted from a person to another person but this creates difficulties for the information to travel without the translation into symbolic form.

Polanyi (1958) suggested that imitation of physical gestures is consisted in the transmission of tacit knowledge.

Polanyi (1958) mentions:

> *By watching the master and emulating his efforts in the presence of his example, the apprentice unconsciously picks up the rules of the art. (p. 55).*

However, to preserve such rules of art, these gestures are only then need to be described into words, drawing, etc. Polanyi (1966) then divided tacit knowledge into two terms: first term and second term. Taking electric shock as an instance, one can better understand electric shock by experiencing the situation itself.

Polanyi (1966) explains:

> *Such is the functional relation between two terms of tacit knowing: we know the first term only by relying on our awareness of it for attending to the second. (p. 10)*

2.2 Knowledge Capture Techniques

One question has been a big significance to the importance of knowledge capturing techniques.

Rosenschein (2003) asked:

> *If a business meeting takes place and no one documents it, do the words spoken retain value?*

It is clearly leads to knowledge bleed when especially experts are leaving the organization and his expertise has not been preserved. To avoid such brain drain, capturing knowledge is crucial with the right technique on a particular knowledge.

Sornlertlamvanich (2009) has come out with a list of commonly used capturing techniques in most organization: interview, on-site observation, brainstorming, consensus decision making, nominal group technique, Delphi method, repertory grid, concept mapping and blackboarding. The author suggests that interview is the most effective way to capture knowledge which this technique involves face to face interaction.

Bednar (1999) seconded that:

> *It's now accepted that two-way, face-to-face communication is the ideal way to accomplish a successful transfer of tacit knowledge.*

Interview is somehow closely related to narrative or storytelling as experts often use narrative to explain interview answers. Narrative is used as it is a two-way communication where there are presence of storyteller and listener. Without listener, the knowledge is not captured nor preserved.

2.3 Defining Narrative

Kerby (1991) explains that narrative helps to examine past events as well as being the medium for aspirations and desires, allowing us perceive possible futures and possible selves. Whilst Nair (2003) defines narrative as a personal inexpensive means of trying out patterns of living, situations, and emotional reactions that one may never experience or want to experience in their own lives. Narrative is merely understood as storytelling on experiences from past events that may be useful for the present and future. It is often fragmented and difficult to understand as a whole at one particular time.

Linde (2001) explains that narrative consists of events and evaluations and so it is well suited to transmit the part of social knowledge that concerns history, values and identity. The significance to transmit these stories is to ensure that the same slipups will not be repeated. These stories will also act as precautions for current situations.

Linde (2001) mentions:

> *The assumption is that the past can be used as a guide for the present and future.*

It is somehow can be categorized as learning by experience. However, there are limitations on telling these stories as the author argues that some kinds of knowledge are easier to convey by narrative than others.

An expert can tell almost any stories but some stories are best being told in a different form (e.g. written, drawn, mimed). Polkinghorne (1988) explained that the term narrative can refer to any spoken or written presentation that is expressed in story form. Linde (2001) compared two situations with different requirements.

Linde (2001) says:

> *I have observed that agents frequently tell stories about sales triumphs and disasters.*

Linde (2001) then compares:

> *In contrast, it is very difficult to narrate business processes: how to set up an office routine, how to train new staff, how to organize one's day and week, what kinds of activities to concentrate on.*

The constraint for business processes is that they are routine events and often leads to more inquiry of reasons for the routine, making it lengthy and more complex.

Despite the limitations, narrative is still accepted as an effective way to transfer tacit knowledge.

Linde (2001) mentions:

> *Narrative is one of the most powerful means of expressing and transmitting such social knowledge.*

The author also suggests that understanding and creating social mechanisms for narration is more crucial than focusing on archival storage. It is no doubt that face to face interaction is the best way to capture narrative knowledge but the important question is that whether the effectiveness of capturing narrative knowledge has a great deal to variety of design dimensions. Linde (2001) comes out with three design dimensions to test this query: capture and production effort, use effort, and genre issues.

- Capture and production effort focuses on the amount of effort placed during capturing narrative knowledge and how it is used to create narrative as a means of transferring knowledge. It is not the matter of the ability to capture the knowledge but how it is made possible for teaching purposes or to come out with lesson learned. Such efforts are needed not only when capturing knowledge but editing and producing knowledge.
- Use effort targets the feasibility of the narrative knowledge captured to the user. Linde (2001) gives an instance where a person receives notification of purchase order which is exactly important rather than getting notifications on the updates of various databases. It is the desire of the users on necessary knowledge that is important but not the act of sharing as much knowledge.
- Genre issues are also important to be taken into consideration in the sense that whether the genre of the story is appropriate. Stories should be

categorized into appropriate genre as to match with the situation and to ease user's findings on particular matters.

2.4 Nonaka's SECI Model

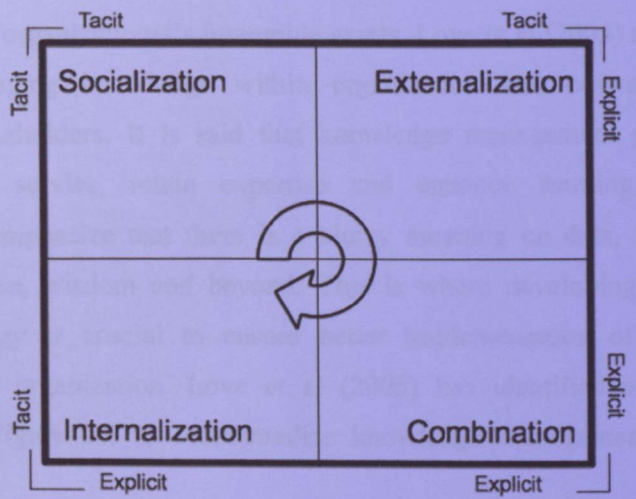

Figure 2.1 *SECI Model*

Nonaka (1991) have used the idea of Polanyi (1958) where he comes out with the explicit and tacit dimension. Nonaka (1991) used the concept in his theory of knowledge-creating company that triggered the interest on tacit knowledge in developing business knowledge. The spiral-type conversions between explicit and tacit knowledge has become the analytical framework on knowledge activities in business organization. (Li et al, 2003).

The transfer of tacit knowledge to tacit knowledge is called socialization while the conversion of tacit knowledge into explicit knowledge is called externalization. Combination is the transfer of explicit knowledge to explicit knowledge while internalization is the conversion of explicit knowledge to tacit knowledge.

Basically, storytelling process involves all four components which are socialization, externalization, combination and internalization. Socialization takes place during the sharing of experiences and stories with the other person. Externalization is when experiences and stories are captured and documented. Sharing the knowledge captured in the document with the other

person can be classified as combination. Internalization takes place when the audience internalizes the stories which have been captured.

2.5 Usage of Framework in Knowledge Management

Liebowitz (1999) has clearly defined knowledge management as a process of creating value from organizational's intangible assets. Love et al (2005) simplifies to sharing and leveraging knowledge within organization and outwards toward customers and stakeholders. It is said that knowledge management promised to improve customer service, retain expertise and enhance learning. However, Liebowitz (1999) emphasize that there is a blurry meaning on data, information, knowledge, expertise, wisdom and beyond. This is where developing knowledge management strategy is crucial to ensure better implementation of knowledge management in an organization. Love et al (2005) has identified a knowledge framework as in Figure 2.2 to conceptualize knowledge management for better understanding.

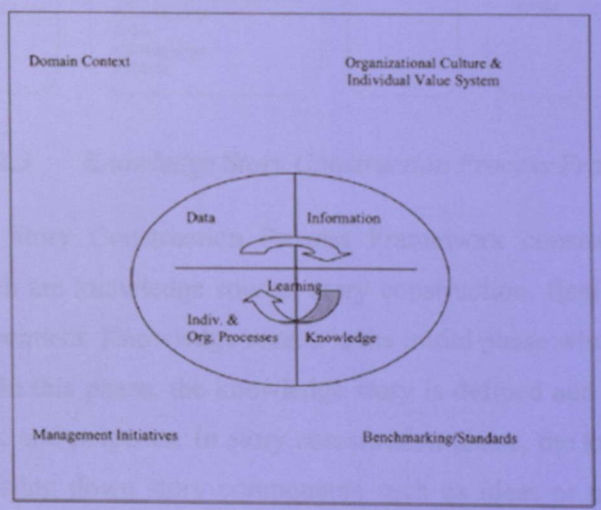

Figure 2.2 *Conceptual view of the knowledge framework.*

The usage of framework has clearly help in understanding as well as explanation in knowledge management. As mentioned earlier narrative knowledge is often fragmented and will consume longer time to be compiled into a whole complete and structured story. As to ease the narrative method of transferring knowledge, a framework could be the effective way to guide in structuring stories. Kalid et al

(2008) seconded that there must be a framework that could evaluate knowledge sharing stories in organisations.

2.6 Structuring Knowledge Stories by Using Framework

Kalid et al (2008) has developed a Knowledge Story Construction Process Framework. This framework is created based on a study conducted to a group of knowledge management students. They were involved in the knowledge story construction workshop where the objective was to study patterns of knowledge story construction. They were instructed to write knowledge stories, followed by interview session to understand how they construct the knowledge stories. Figure 2.3 shows the general process from knowledge capture until knowledge sharing that was resulted from the workshop.

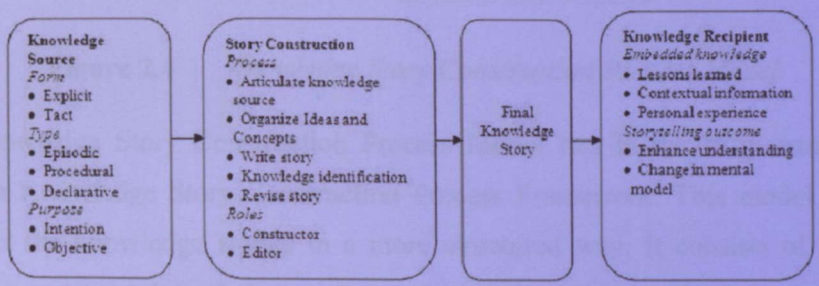

Figure 2.3 *Knowledge Story Construction Process Framework*

The Knowledge Story Construction Process Framework consists of four major components which are knowledge source, story construction, final knowledge story and knowledge recipient. Knowledge source is the initial phase where the knowledge is first captured. In this phase, the knowledge story is defined and classified into its own forms, types, and purposes. In story construction phase, the knowledge story is constructed by listing down story components such as ideas or concepts and then arranging the flow as well as defining roles in the story. In final knowledge story phase, the knowledge story is edited and moderated by refining the value and quality of the knowledge story as well as its relevance. Knowledge recipient phase is where the knowledge stories are shared.

Figure 2.4 shows the general pattern of how most of the students constructing their knowledge stories.

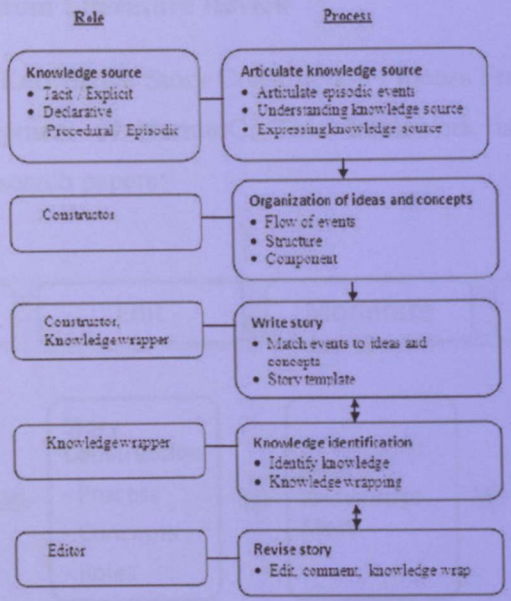

Figure 2.4 *Knowledge Story Construction Process Model*

The Knowledge Story Construction Process Model lies in the story construction phase in Knowledge Story Construction Process Framework. This model helps to construct the knowledge stories in a more structured way. It consists of series of action to construct knowledge stories and also the roles involved in the process (Kalid et al, 2008). There are 5 steps involved in the processes which are articulate the knowledge, organization of ideas and concepts, write story, knowledge identification and revise story. In the first step which is to articulate the knowledge, this is where the knowledge story is defined and the items and events are listed. These items and events are arranged in the second step which is the organization of ideas and concepts. In the third step which is to write story, the items and events are elaborated and further explained. In the last step which is to revise story, the knowledge story is edited and commented before producing the final knowledge story. This is to ensure the quality and relevance of the knowledge story as well as to ensure the knowledge story is well constructed.

2.7 Findings from Literature Review

Figure 2.5 shows the Knowledge Story Construction Process Framework that will be used for the development of NarrateC. This framework is derived from two frameworks in two research papers:

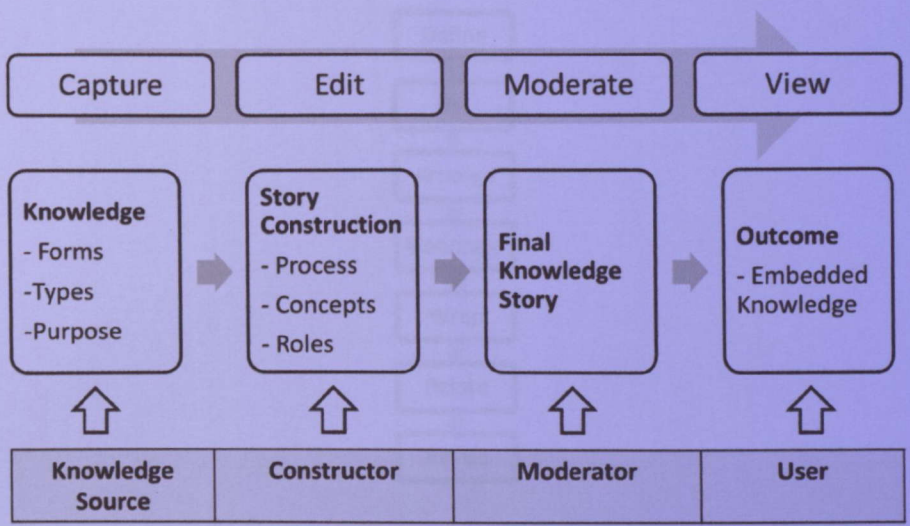

Figure 2.5 *Knowledge Story Construction Process Framework*

The components are similar to the referenced framework which are knowledge source, story construction, final knowledge and knowledge recipient or outcome. However, this proposed framework adds role and clearly states the phases that the components belong to which are capture, edit, moderate and view. The responsibility of each role is explained in Table 2.1 below.

Role	Task
Knowledge source	• Identify forms of story (Tacit/Explicit) • Identify types of story (Procedural/Declarative/Episodic) • Determine purpose of story
Constructor	• Create and construct story
Moderator	• Validate story • Perform quality check on story content (Relevance of story)
User	• View story • Comment and give feedback about the story

Table 2.1 *Task of the role*

Figure 2.6 shows the Knowledge Story Construction Process Model that will be used by the selected staffs as a guide to structure knowledge. This is based on the findings of this paper:

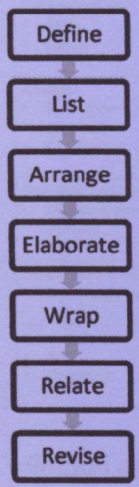

Figure 2.6 *Knowledge Story Construction Process Model*

This model can be further understood through classification as follows:

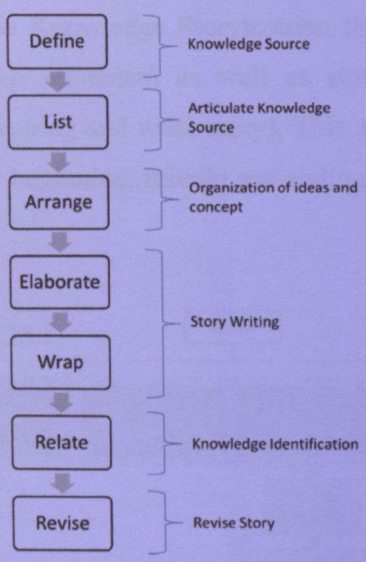

Figure 2.7 *Expansion of Knowledge Story Construction Process Model*

This proposed model is aimed to give clearer guidelines to knowledge story constructor. The definition of each processes are as follows:

Process	Definition
Knowledge Source	Define whether the story is: • Tacit / Explicit • Procedural/ Declarative/ Episodic
Articulate Knowledge Source	List down all the: • Items • Events
Organization of Ideas and Concept	Arrange: • Flow of events • Structure • Component
Story Writing	Elaborate and Wrap story by: • Matching events with ideas and concept
Knowledge Identification	Relate story with: • Knowledge significance
Revise Story	Finalize story: • Edit • Comment

Table 2.2 *Definition of the process*

The model is further being simplified to ensure faster and better understanding for the knowledge constructor on how to construct the stories. This simplified version of the model still contains all the process in the initial model. Some processes are combined into one which is Knowledge Storytization that contains organization of ideas and concept (develop sequence) as well as story writing and knowledge identification (mapping/wrapping and write story). This model contains the common structure of story which are beginning, middle and ending.

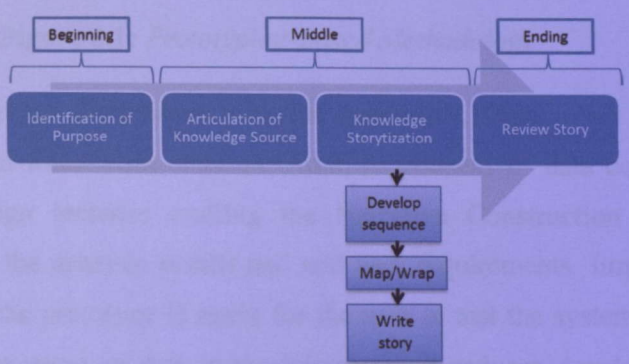

Figure 2.8 *Simplified Knowledge Story Construction Process Model*

CHAPTER 3: METHODOLOGY

3.1 RESEARCH METHODOLOGY

The chosen research methodology is the prototyping based methodology that shows what are the complete requirements needed for the project and it is life cycle. This methodology performs the analysis, design and implementation phases simultaneously and these phases are repeatedly performed in a cycle until the system is complete. It is an iterative, trial-and-error process that takes place between the developers and the users.

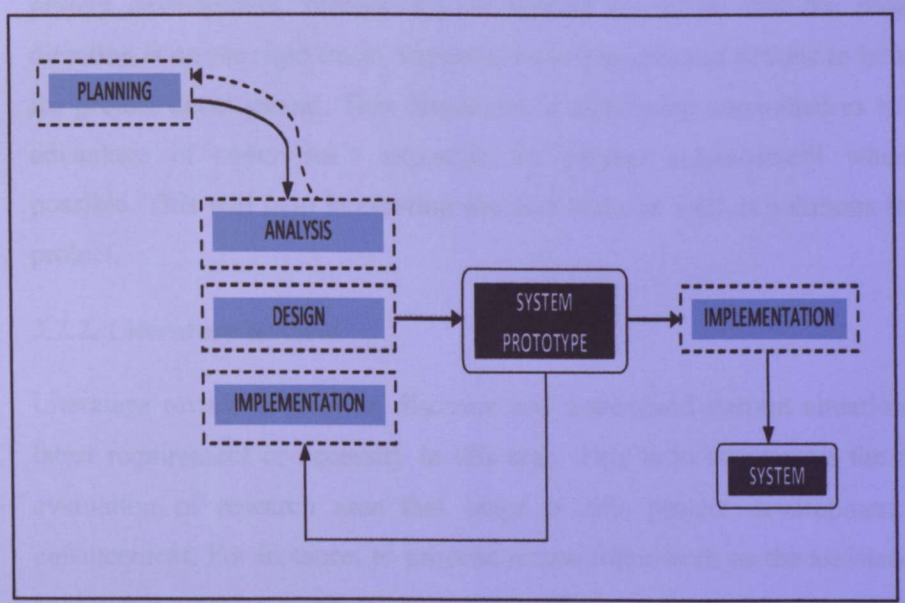

Figure 3.1: *Prototyping-Based Methodology*

Planning phase involves discussions with the supervisor, Gantt chart preparation, literature review and framework creation. Analysis consists of data collection and data analysis. Design includes crafting the Narrative Construction Application Systems align with the analysis results and end user requirements. Implementation will be done when the prototype is ready for the user to test the system first before launching. The advantages of this methodology are it reduces development cost, decrease communication problems and produces the right system the first time. This methodology improves and increases user involvement which allows them to see and

interact with a prototype to provide earlier, better and more complete feedback and specifications. Users know the problem and requirement better than the developer, thus, increased interaction can result in a better quality of the system. This is most likely to satisfy the users' desire for look, feel and performance.

3.2 PROJECT ACTIVITIES

3.2.1. Discussion

Discussion is conducted with the supervisor on weekly basis mainly for project development and enhancement. As supervisor is to assist student on project development, discussions are needed to ensure that the project's direction is on the right track. Supervisor advices relevant actions to be taken for project development. This discussion is also being conducted as to take advantage of supervisor's expertise for project enhancement whenever possible. This will help in creating the best ideas as well as solutions in this project.

3.2.2. Literature Review

Literature review is done to discover and understand current situation and latest requirement or necessity in this area. This is to summarize the depth evaluation of research area that helps in this project development and enhancement. For instance, to propose a new framework as the assistance of constructing stories, a critical research on existing way of constructing stories is needed as to identify what have worked and what have failed. This could lead to better ideas to be implemented in this project.

3.2.3. Data Collection

Data is gathered through survey and interview. The survey is focused on all the staffs in the department. This is to understand current knowledge sharing practices among the staffs. Whilst, interview is conducted within focused unit in ITMS department where some of the staffs are being selected to share stories based on their knowledge. Those particular staffs will be introduced to the proposed Knowledge Story Construction Process Model to guide them in

structuring their stories. Another part of the interview is done after the stories have been completed. This is to understand the feedback of the usefulness of proposed model. The process of data collection can be explained through Figure 3.2 and Figure 3.3.

Diagram 3.2 shows the process of conducting survey.

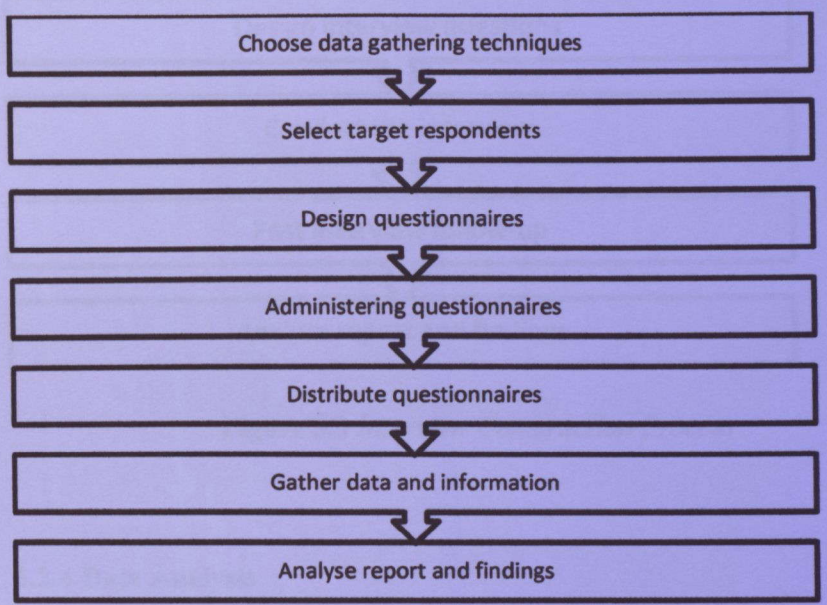

Figure 3.2 *Survey Construction Process*

Figure 3.3 shows the process of conducting the interview.

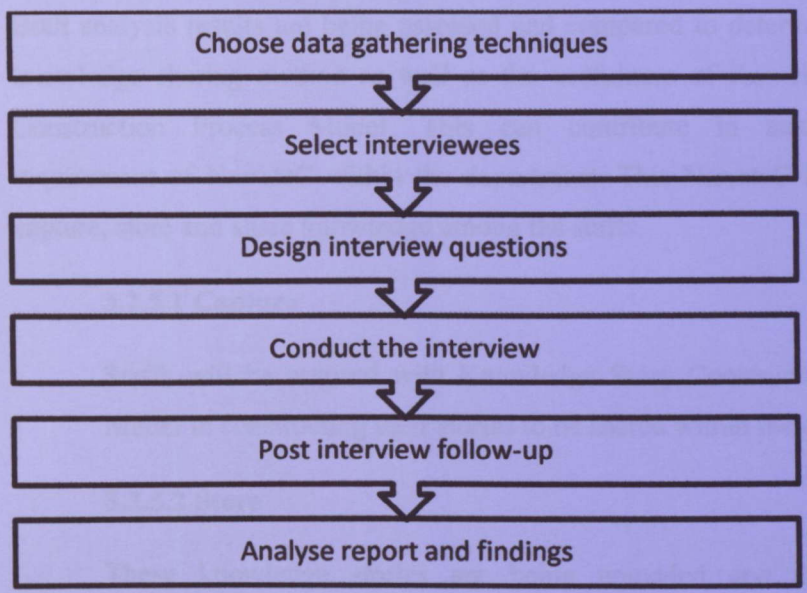

Figure 3.3 *Interview Construction Process*

3.2.4 Data Analysis

3.2.4.1 Quantitative data analysis

This type of analysis is used for survey results as these results are quantifiable. This is because majority of the results are numbered (usually used for ranking). Statistical method (such as average and mode) is widely used in this type of analysis. These results can be converted into statistics as this would help better in understanding the feedback as they show measurement.

3.2.4.2 Qualitative data analysis

This type of analysis is used for interview results as these results are qualitative. The reason for this is the results are subjective and not measurable. These results are usually needed to understand human behaviour and reasons of such behaviour. For instance, reasons for not using a knowledge model are subjective and cannot be ranked. This only provides explanation to understand such actions.

3.2.5 Design

Both analysis results are being assessed and compared to determine current knowledge sharing method as well as the usefulness of Knowledge Story Construction Process Model. This can contribute in analyzing the requirement of NarrateC within the department. This NarrateC is aimed to capture, store and share knowledge among the staffs.

3.2.5.1 Capture

Staffs will be assisted with Knowledge Story Construction Process Model in constructing their stories to be shared within the department.

3.2.5.2 Store

These knowledge stories are being uploaded and tagged with appropriate keywords for searching purposes.

3.2.5.3 Share

The uploaded materials are being shared within the department and staffs may find desired topics by entering related keywords which will then lead to necessary stories.

This will be the platform for their knowledge sharing practices and is created based on their preferences and requirements. These preferences and requirements are all based on the analysis results. This is to ensure the right technology is invented for the right requirements.

Figure 3.4 shows the use case diagram for the Narrative Construction Application System. User is authorized to register/login, create/edit stories, share stories, search stories and view/comment stories. The content in the system will be based on user input.

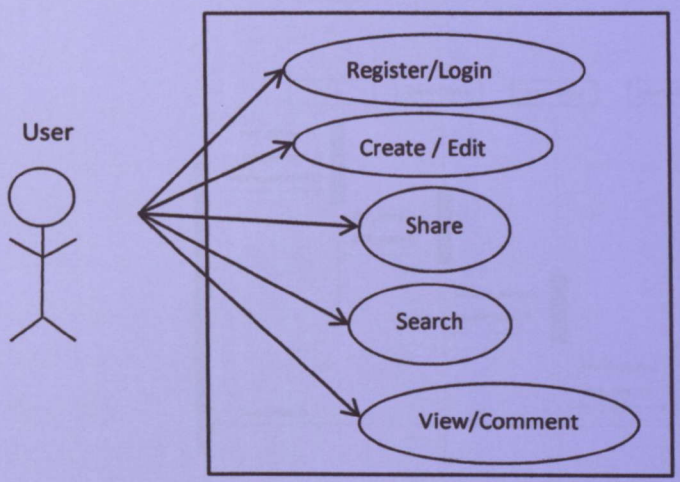

Figure 3.4 *Use case diagram for NarrateC*

Figure 3.5 shows the class diagram for NarrateC. Basically there are 3 databases involved in the system which are story content, user details and comment details. Story content lies in create story class, user details lie in user class and comment details lie in comments class. Search story and view story classes are the subclasses of create story class.

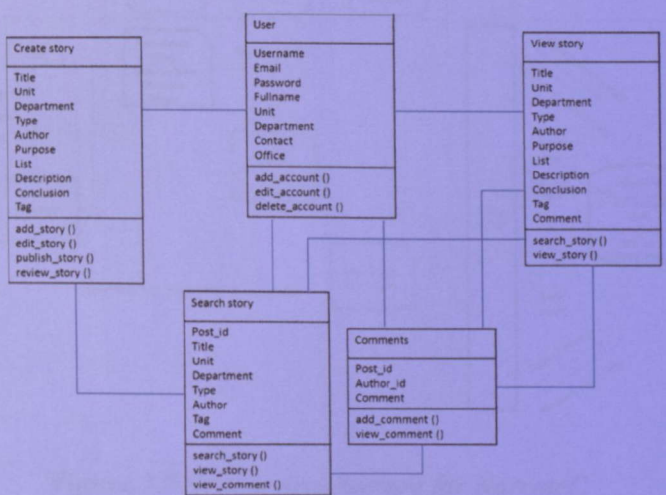

Figure 3.5 *Class diagram for NarrateC*

Figure 3.6 shows the sequence diagram for NarrateC. Users will need to register first to add their accounts. Once registered, they are allowed to edit or delete their accounts. Then, they are authorized to create stories and send for review before publishing the stories. Users can then search stories that are being published and read as well as comment on the stories.

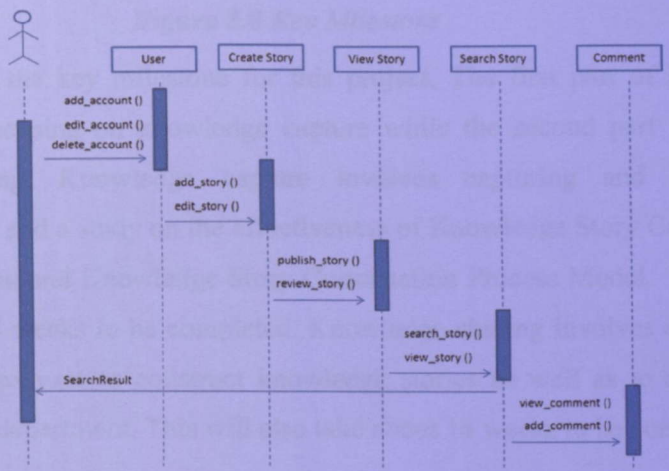

Figure 3.6 *Sequence diagram for NarrateC*

Figure 3.7 shows the system architecture for NarrateC. Basically, there are 3 main functions in the NarrateC which are create story, share story and view/comment story.

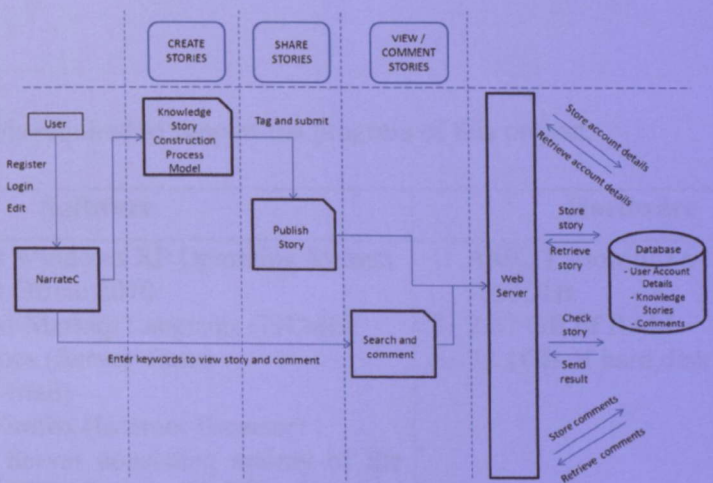

Figure 3.7 *System Architecture for NarrateC*

3.3 KEY MILESTONE

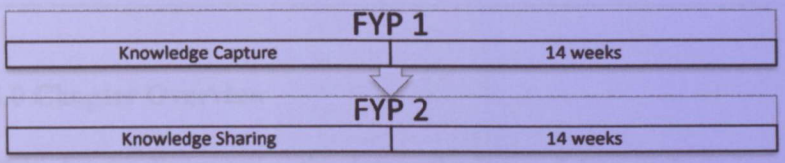

Figure 3.8 *Key Milestone*

Figure 3.8 shows the key milestone for this project. The first part of Final Year Project will be focusing on knowledge capture while the second part will be on knowledge sharing. Knowledge capture involves capturing and structuring knowledge stories and a study on the effectiveness of Knowledge Story Construction Process Framework and Knowledge Story Construction Process Model. This phase will take about 14 weeks to be completed. Knowledge sharing involves designing a NarrateC that helps user to construct knowledge stories as well as to share those stories within the department. This will also take about 14 weeks to be completed.

3.4 GANTT CHART

Gantt chart is prepared initially to identify and forecast actions to be taken for project development and also to keep track on the progress of the project. This chart is created for 1 semester projection as this chart only applies for Final Year Project 2. See Appendix 1.

3.5 TOOLS

Below are the tools required to support the progress of this project:

Software	Hardware
1. Microsoft Windows XP Operating System 2. Microsoft Office 2010 3. HyperText Markup Language (HTML) 4. GoogleDocs (Survey form) 5. Gmail (E-mail) 6. Mozilla Firefox (Internet Browser) 7. XAMPP Server consisting mainly of the Apache HTTP Server, MySQL database, and interpreters for scripts written in the PHP	1. AMC Turion(tm) 64 X2 TL-60 2.00GHz 2. 2.87 GB of RAM 3. 78.1GB of hard disk

Table 3.1 *Tools used in the project*

CHAPTER 4: RESULTS AND DISCUSSION

4.0 Chapter Overview

This chapter discusses on the data gathering and data analysis involved in the project. Data gathering is done through survey and interview.

4.1 Survey Analysis

The purpose of the survey is to understand the culture, technology and perception of ITMS department on the usage of storytelling as knowledge sharing method. An official email invitation has been sent out to the whole ITMS department to request participation of ITMS staffs in this survey research. Survey is conducted online where respondents are given a link to a form in GoogleDocs. Online survey has been chosen as the method of survey as it is faster and reachable to ITMS staffs. In addition, response in online survey is real-time and can be monitored easily. 11 respondents have participated in the survey research within 1 month. The survey is divided into 5 sections.

The first section is regarding the background of respondents. The objective of this set of questions is to understand the background of respondent. ITMS has three units which are IT & Facilities Operations (ITFO), Network and Application. ITFO unit takes the major part of ITMS with most number of staffs. Most numbers of ITMS staffs have worked more than 5 years in IT field. This shows that they have more experience, better knowledge and skills in their area. Besides that, eventhough some staffs have only worked for less than 1 year in this department or in UTP, they have more years of experience in IT field before working in this department or UTP. This shows that new staffs are also experienced, knowledgeable, and skilled. This scenario brings better opportunity for ITMS department to exchange knowledge stories to improve staffs' capabilities. In addition, given that the number of less experience staffs or new staffs is lower than the experienced staffs, knowledge sharing are highly needed within the organization.

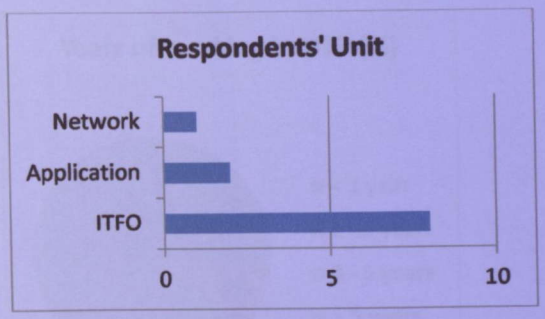

Figure 4.1 *Unit of Respondents*

Figure 4.1 shows the unit that the respondents belong to. Most of them are from IT & Facilities Operations (ITFO) unit, followed by Application and Network units.

No.	Question	Highest
1	How long have you been with this department?	> 5 years
2	How many years of working experience in UTP?	> 5 years
3	How many years of experience in IT field?	> 5 years

Table 4.1 *Background of respondents*

Table 4.1 shows the background of respondents regarding the years of working experience in the department, UTP and IT field. Most of them have more than 5 years of working experience.

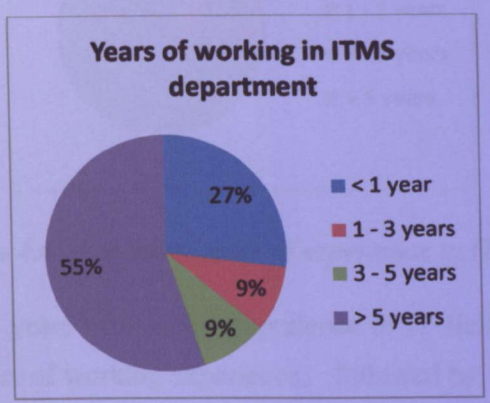

Figure 4.2 *How long have you been with this department?*

Figure 4.2 shows the years of working experience in ITMS department. Most of them have been more than 5 years, followed by less than 1 year. There are 9% of them that have 3 to 5 years and 1 to 3 years each.

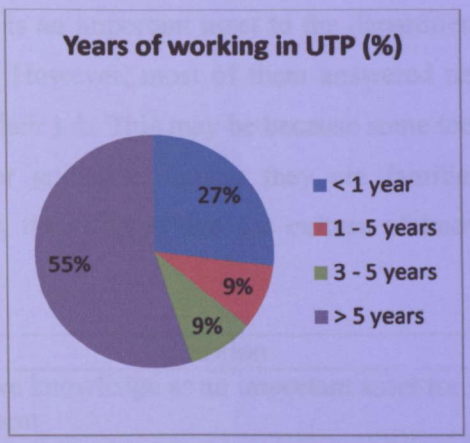

Figure 4.3 *How many years of working experience in UTP?*

Figure 4.3 shows the years of working experience in UTP which most of them have more than 5 years of working experience, followed by less than 1 year. There are 9% of them that have 3 to 5 years and 1 to 3 years each.

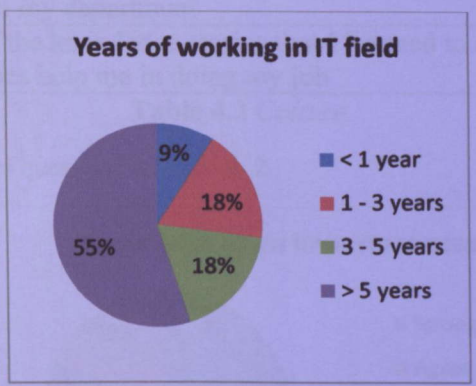

Figure 4.4 *How many years of experience in IT field?*

Figure 4.4 shows the years of working experience in IT field where most of them have more than 5 years of working experience, followed by 1 to 3 years and 3 to 5 years. The least have less than 1 year of working experience in IT field.

Section 2 is regarding the culture. The objective of this set of questions is to understand the role of organization culture in sharing knowledge stories. *The hypothesis is that t*he culture of knowledge sharing in ITMS department is strong and the awareness of importance of knowledge sharing between the staffs is high. Hypothesis is accepted because most of the staffs agreed that knowledge are often shared between them and has helped them to do their work. They also agreed that tacit knowledge is most needed and applicable to their tasks. Almost all of the staffs

agreed that knowledge is an important asset to the department and has to be shared within the department. However, most of them answered neutral about relying on tacit knowledge to do their job. This may be because some technical tasks need to be referred to manuals or guidelines unless they are familiar with the procedure. Therefore, collectively, they agreed that the culture of knowledge sharing in this department is very rich.

No.	Question	Highest
1	I perceive knowledge as an important asset for my department	Strongly Agree
2	Tacit knowledge such as experiences and insights are more important than explicit knowledge such as manuals and documents	Agree
3	I rely on my tacit knowledge to do my job	Neutral
4	I rely on my tacit knowledge MORE than explicit knowledge in doing my job	Agree
5	The culture of sharing of work-related stories is strong in my department	Agree
6	Most of the knowledge stories that I listened to at work does help me in doing my job	Agree

Table 4.2 *Culture*

Table 4.2 shows the set of questions for section 2.

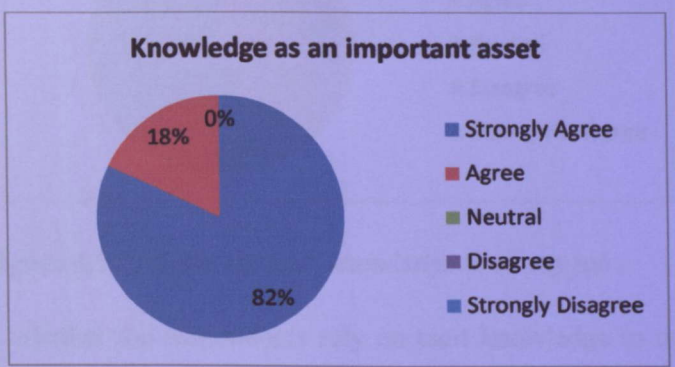

Figure 4.5 *I perceive knowledge as an important asset for my department*

Figure 4.5 shows whether the respondents agree the knowledge is the important asset for their department. Majority strongly agree with the statement.

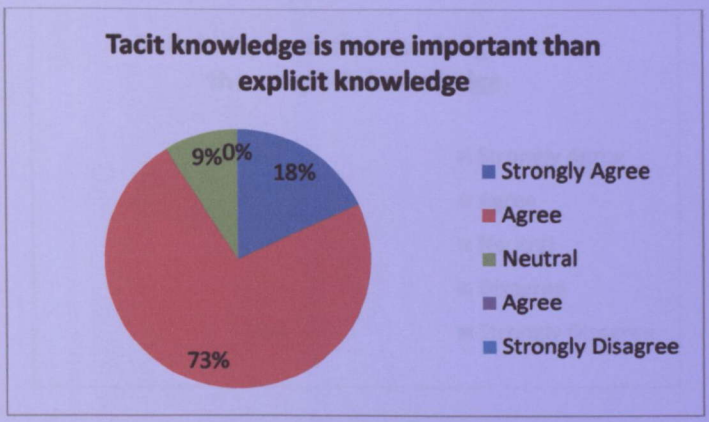

Figure 4.6 *Tacit knowledge such as experiences and insights are more important than explicit knowledge such as manuals and documents*

Figure 4.6 shows whether the respondents agree that tacit knowledge is important than explicit. Most of them agree with the statement.

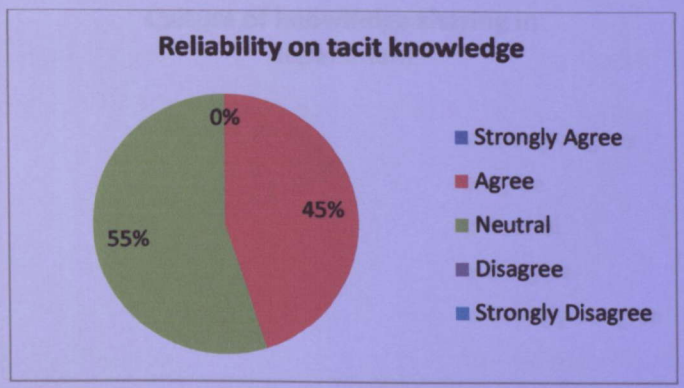

Figure 4.7 *I rely on my tacit knowledge to do my job*

Figure 4.7 shows whether the respondents rely on tacit knowledge to do their job. Most of them answered neutral because the variety of job.

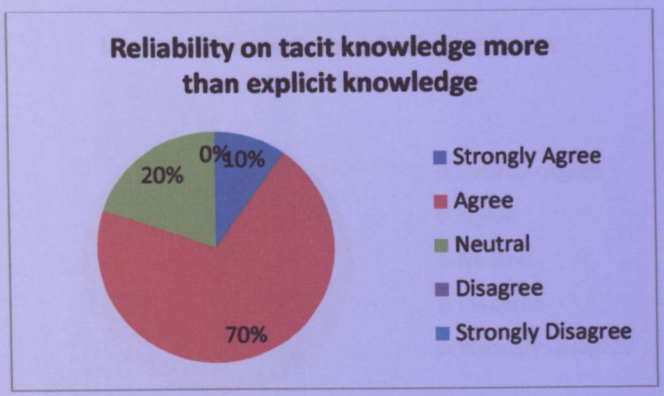

Figure 4.8 *I rely on my tacit knowledge MORE than explicit knowledge in doing my job*

Figure 4.8 shows whether the respondent rely on their tacit knowledge more than explicit knowledge. Most of them agree with the statement.

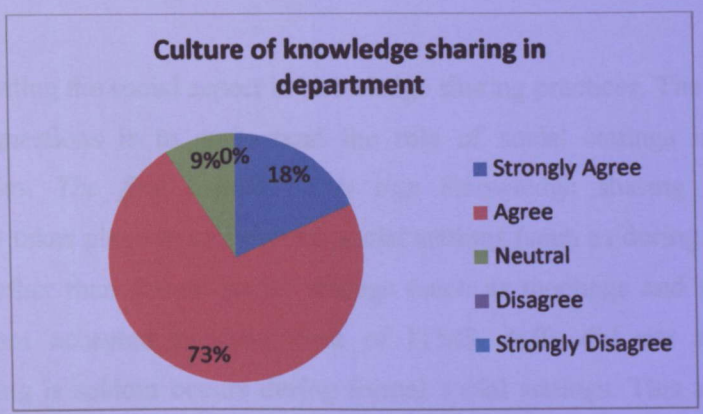

Figure 4.9 *The culture of sharing of work-related stories is strong in my department*

Figure 4.9 shows whether the respondents agree that the culture of sharing of work-related stories in their department is strong. Most of them agree with the statement.

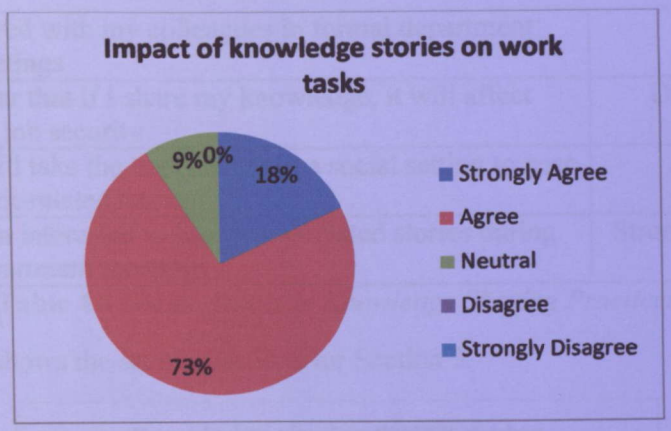

Figure 4.10 *Most of the knowledge stories that I listened to at work does help me in doing my job*

Figure 4.10 shows whether most of the knowledge stories that the respondents listened to at work help them in doing their job. Most of them agree with the statement.

Section 3 is regarding the social aspect in knowledge sharing practices. The objective of this set of questions is to understand the role of social settings in sharing knowledge stories. *The first hypothesis is that* Knowledge sharing in ITMS department often takes place in an informal social settings (such as during breaks or in the pantry) rather than formal social settings (such as meetings and seminars). Hypothesis is not accepted because most of ITMS staffs did not agree that knowledge sharing is seldom occurs during formal social settings. This shows that knowledge sharing happens both during informal and formal social settings. *The second hypothesis is* ITMS staffs are willing to share and to hear knowledge stories between them. Hypothesis is accepted because most of them agreed that they are willing to share and hear knowledge stories in any social settings.

No.	Question	Highest
1	Work-related stories are shared only during social gatherings such as lunch breaks, at pantry, etc.	Agree
2	Work-related stories are seldom shared during formal department meeting	Disagree
3	I am willing to share my stories about the experience I gained through training or problems solved with my colleagues in social settings	Agree
4	I am willing to share my stories about the experience I gained through training or problems	Agree

	solved with my colleagues in formal department meetings	
5	I fear that if I share my knowledge, it will affect my job security	Disagree
6	I will take the opportunity in a social setting to hear work-related stories	Agree
7	I am interested to hear work-related stories during department meetings	Strongly Agree

Table 4.3 *Social Aspect in Knowledge Sharing Practices*

Table 4.3 shows the set of questions for Section 3.

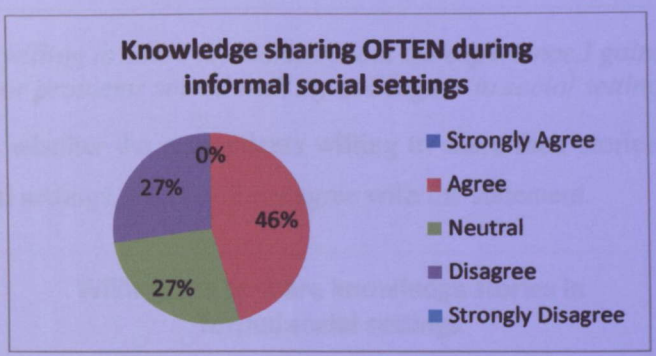

Figure 4.11 *Work-related stories are shared only during social gatherings such as lunch breaks, at pantry, etc.*

Figure 4.11 shows whether work-related stories are shared only during social gatherings. Most of the respondents agree with the statement.

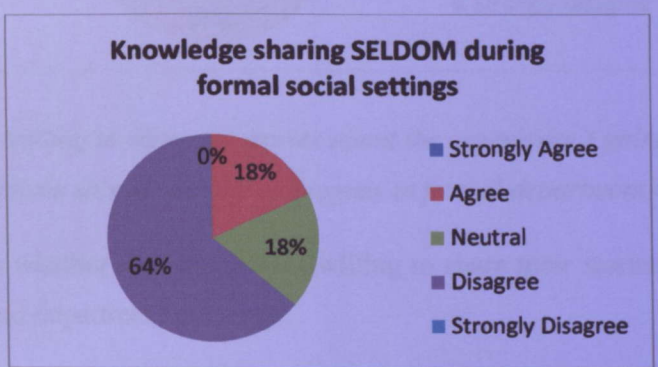

Figure 4.12 *Work-related stories are seldom shared during formal department meeting*

Figure 4.12 shows whether the work-related stories are seldom shared during formal department meeting. Most of the respondents disagree with the statement.

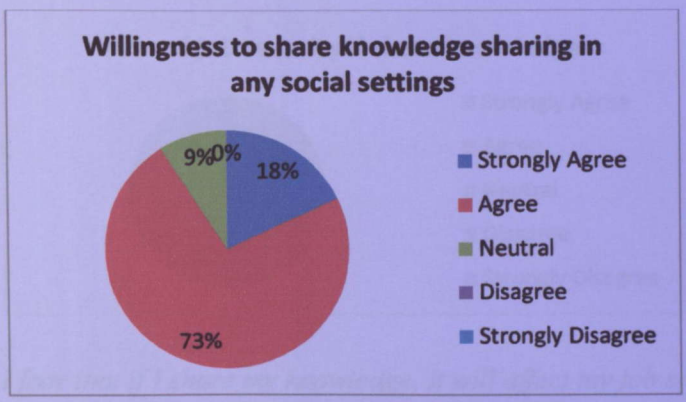

Figure 4.13 *I am willing to share my stories about the experience I gained through training or problems solved with my colleagues in social settings*

Figure 4.13 shows whether the respondents willing to share their stories about their experience in social settings. Most of them agree with the statement.

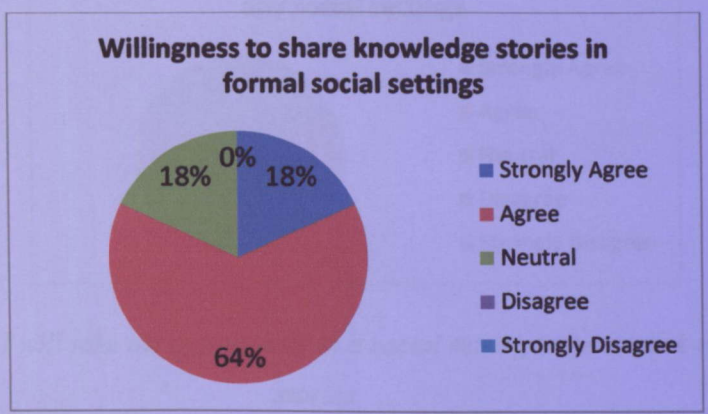

Figure 4.14 *I am willing to share my stories about the experience I gained through training or problems solved with my colleagues in formal department meetings*

Figure 4.14 shows whether the respondents willing to share their stories about their experience in formal department meetings.

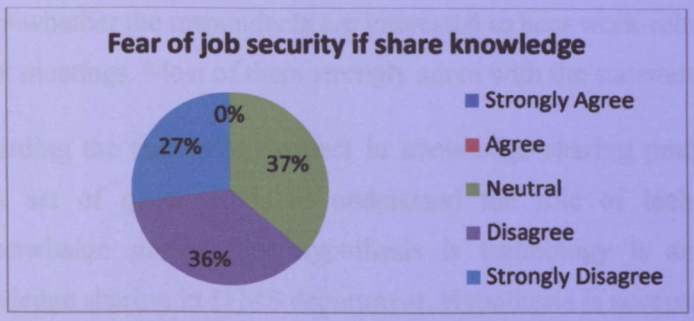

Figure 4.15 *I fear that if I share my knowledge, it will affect my job security*

Figure 4.15 shows whether the respondents fear that if they share their knowledge, it will affect their job securities. Most of them answered neutral for this statement.

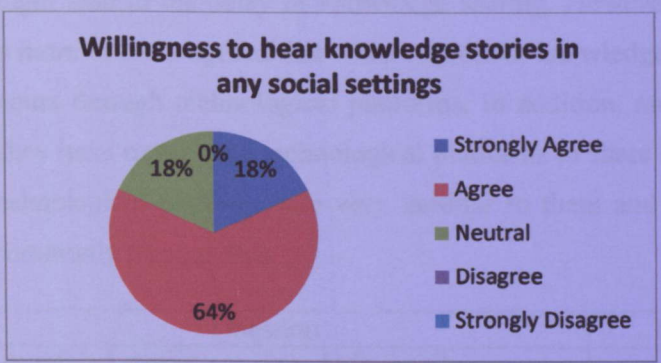

Figure 4.16 *I will take the opportunity in a social setting to hear work-related stories*

Figure 4.16 shows whether the respondents will take the opportunity in a social setting to hear work-related stories. Most of them agree with the statement.

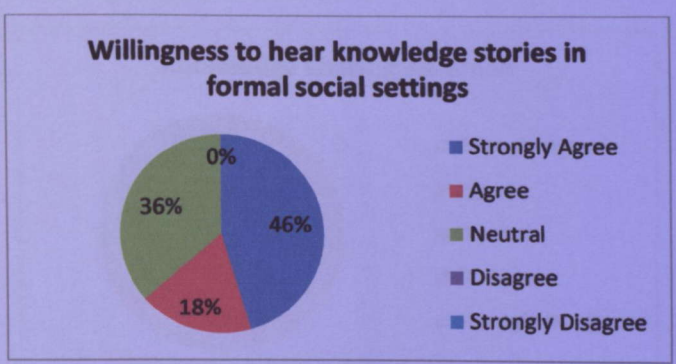

Figure 4.17 *I am interested to hear work-related stories during department meetings*

Figure 4.17 shows whether the respondents are interested to hear work-related stories during department meetings. Most of them strongly agree with the statement.

Section 4 is regarding the technology aspect in knowledge sharing practices. The objective of this set of questions is to understand the role of technology in disseminating knowledge stories. The hypothesis is technology is an effective medium for knowledge sharing in ITMS department. Hypothesis is accepted because most of ITMS staffs agreed that they often use or receive knowledge stories through technological platforms (such as email and intranet). Most of them answered neutral when it comes to receiving knowledge within 24 hours when requested. This is may be depends on the work condition as some may be busy on projects or went for outstation which might lead to the delay of knowledge sharing. However, it can be seen as effective as more of them agreed that when requested, knowledge stories are shared within 24 hours through technological platforms. In addition, most of them did not agree that they have never used technological platforms to share knowledge. This shows that technological platforms are very familiar to them and knowledge stories are shared commonly through this.

No.	Question	Highest
1	Work-related stories are shared via email	Agree
2	Work-related stories shared via the intranet	Agree
3	I have never shared stories via technological platforms	Disagree
4	Work-related stories are shared within 24 hours when requested	Neutral

Table 4.4 *Technology Aspect in Knowledge Sharing Practices*

Table 4.4 shows the set of questions in Section 4.

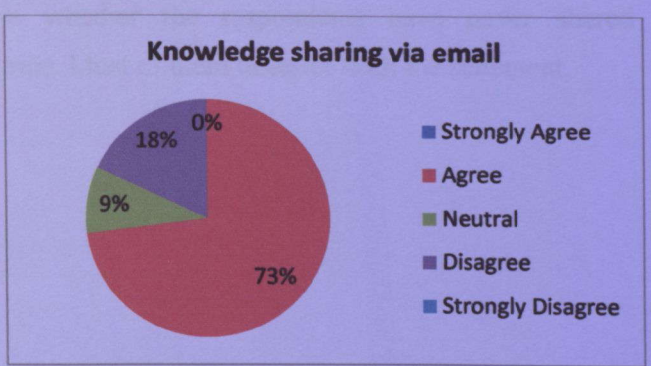

Figure 4.18 *Work-related stories are shared via email*

Figure 4.18 shows whether work-related stories are shared via email. Most of the respondents agree with the statement.

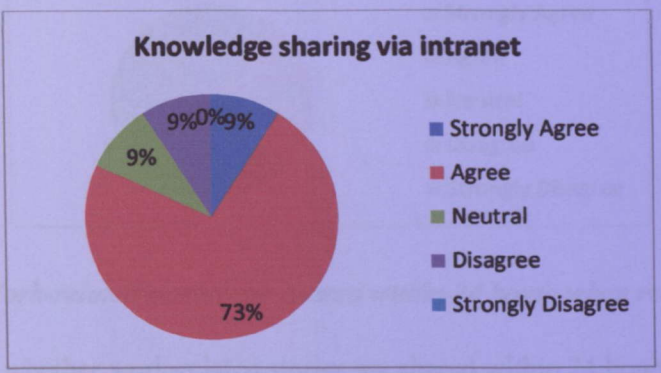

Figure 4.19 *Work-related stories shared via the intranet*

Figure 4.19 shows whether work-related stories are shared via the intranet. Most of the respondent agree with the statement.

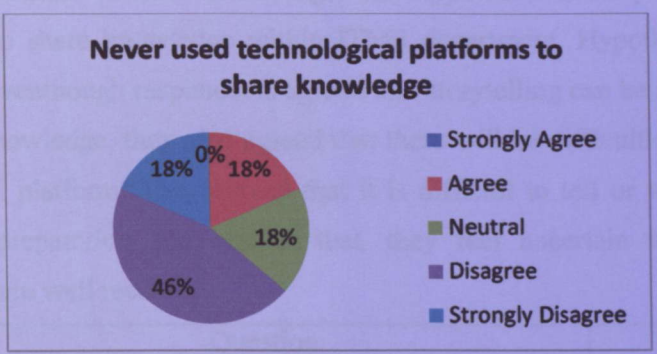

Figure 4.20 *I have never shared stories via technological platforms*

Figure 4.20 shows whether the respondents have never shared stories via technological platforms. Most of them disagree with the statement.

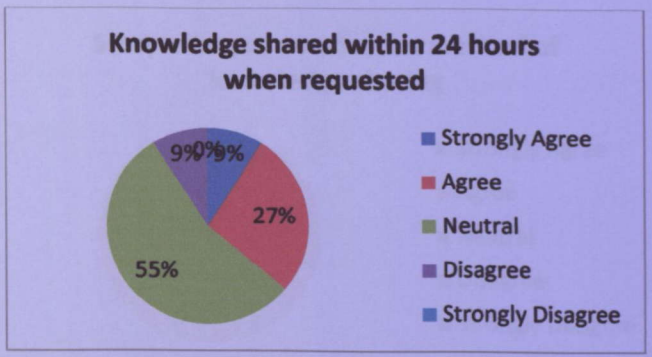

Figure 4.21 *Work-related stories are shared within 24 hours when requested*

Figure 4.21 shows whether work-related stories are shared within 24 hours when requested. Most of the respondents answered neutral on this statement.

Section 5 is regarding storytelling in knowledge sharing practices. The objective of this set of questions is to see the respondent's perception on the use of knowledge story as a tool to transfer or share knowledge. The *Hypothesis is s*torytelling is an effective method to share knowledge within ITMS department. Hypothesis is not accepted because eventhough respondents agreed that storytelling can be an effective method to share knowledge, they also agreed that there will be difficulties in telling the story in formal platform. They agreed that it is difficult to tell or write stories with or without preparation and besides that, they feel uncertain whether the knowledge shared are well received.

No.	Question	Highest
1	I perceive that storytelling is an effective tool in sharing work-related knowledge	Agree
2	I believe stories complements explicit knowledge	Agree
3	If I were to ask to tell stories in a formal platform, I would have difficulties in telling the stories even with preparation	Agree
4	If I were to ask to tell stories in a formal platform, I would feel uncertain if the audience understand the knowledge that I intend to tell	Agree
5	If I were to write a story about work, I think that I would have difficulties in writing it	Agree
6	If I were to write a story about work, I feel uncertain whether the readers would understand that knowledge that I intend to tell	Agree

Table 4.5 *Storytelling in Knowledge Sharing Practices*

Table 4.5 shows the set of questions for Section 5.

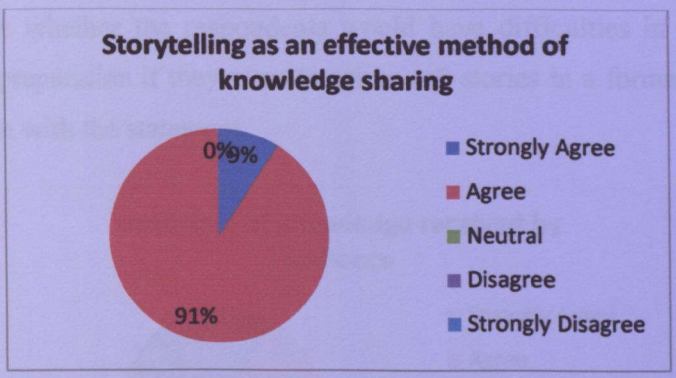

Figure 4.22 *I perceive that storytelling is an effective tool in sharing work-related knowledge*

Figure 4.22 shows whether the respondents perceive storytelling as an effective tool to share knowledge. Most of them agree with the statement.

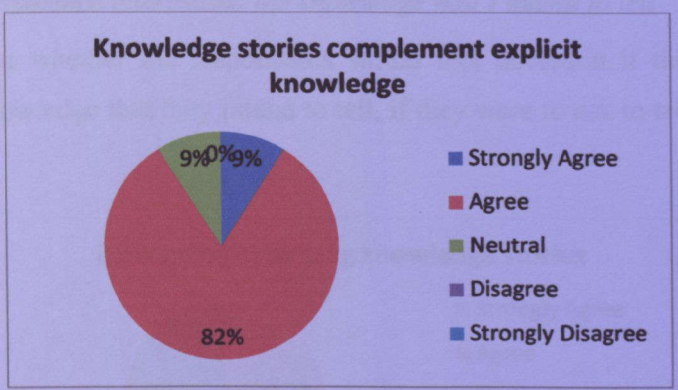

Figure 4.23 *I believe stories complements explicit knowledge*

Figure 4.23 shows whether the respondents believe stories complements explicit knowledge. Most of them agree with this statement.

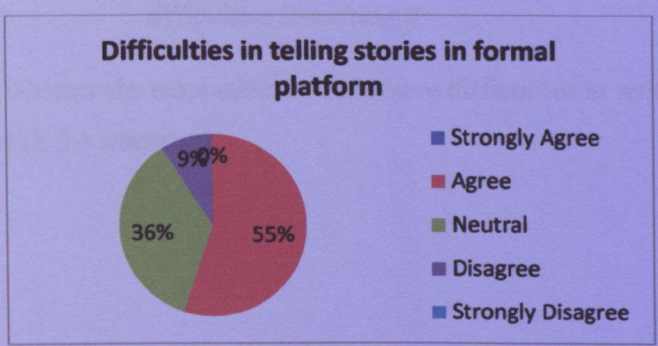

Figure 4.24 *If I were to ask to tell stories in a formal platform, I would have difficulties in telling the stories even with preparation*

Figure 4.24 shows whether the respondents would have difficulties in telling the stories even with preparation if they were to ask to tell stories in a formal platform. Most of them agree with the statement.

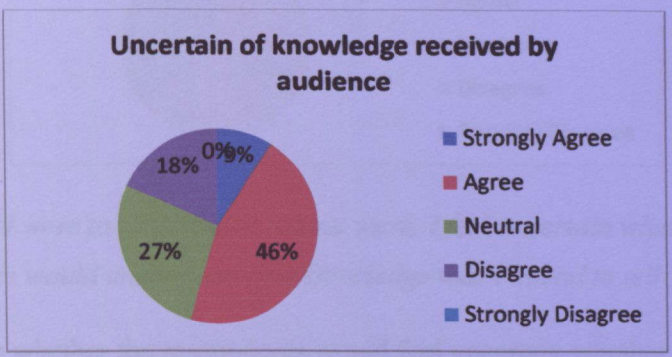

Figure 4.25 *If I were to ask to tell stories in a formal platform, I would feel uncertain if the audience understand the knowledge that I intend to tell*

Figure 4.25 shows whether the respondents would feel uncertain if the audience understand the knowledge that they intend to tell, if they were to ask to tell stories in a formal platform.

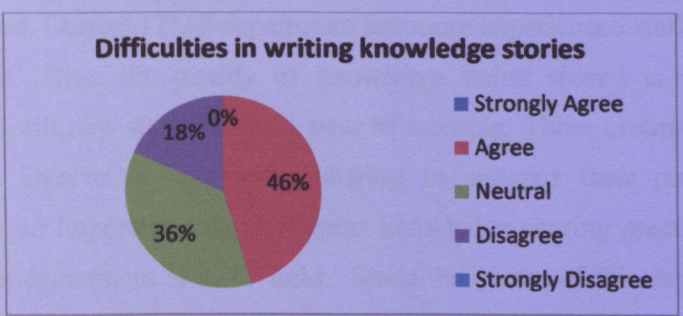

Figure 4.26 *If I were to write a story about work, I think that I would have difficulties in writing it*

Figure 4.26 shows whether the respondents would have difficulties in writing stories. Most of the agree with the statement.

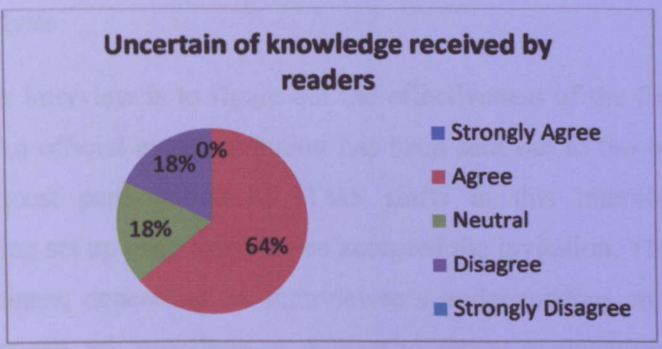

Figure 4.27 *If I were to write a story about work, I feel uncertain whether the readers would understand that knowledge that I intend to tell*

Figure 4.27 shows whether the respondents would feel uncertain whether the readers would understand that knowledge that they intend to tell. Most of them agree with this statement.

Knowledge sharing practices are common and important within ITMS department for the staffs to gain more experience and knowledge, improve skills as well as enhance capabilities. Current ITMS department has more experienced staffs than less experienced staffs. Thus, the quality of knowledge being shared is very high. Besides, there are still new staffs below 1 year of working. These groups will most likely willing to involve in knowledge sharing to enhance their performance. Technology plays an important role to support knowledge sharing practices in the department as this department is in IT field. Since the nature of this department is based on IT, there will be fewer difficulties in implementing a new system for knowledge sharing. Eventhough, the culture and social aspects in knowledge sharing practices in this department is positive, technology can accelerate knowledge sharing as well as to keep or store the knowledge in explicit form, ready to be used in the future. However, the choice of storytelling method to share knowledge is not preferable within this department. This may be because they are unsure of how well storytelling is being constructed. Further research is to be made on the usage of framework to help storytelling process. This is to prove that storytelling can be effective with the implementation of story construction process framework. The next phase of data collection is interview which aims to test the framework in order to ease story construction process.

4.2 Interview Analysis

The purpose of this interview is to figure out the effectiveness of the framework to construct stories. An official email invitation has been sent out to the whole ITMS department to request participation of ITMS staffs in this interview session. Appointment is being set up once interviewee accepted the invitation. This interview took about 15 minutes, depending on interviewee's understanding on the subject matter. Interviewee can ask questions or request to repeat explanation during the conversation. Interviewer explained the purpose of this interview, followed by brief information on the project. Next, interviewer is to understand work background of the interviewee such as nature of work as well as the knowledge regarding work tasks. After that, interviewer explained the framework from the research that will relate to the said knowledge. Interviewer has requested to provide some inputs by writing a story regarding one of the tasks explained earlier by using this framework as a guideline to develop the story. Interviewee is provided with brief information on the processes for reference as well as a template to write the story. Interviewee was informed that this story will be the sample story in my project documentation as well as in the proposed system in the project. Interviewee was given a timeframe of 3 to 4 days to complete the story. Once completed, interviewee is to inform interviewer through the phone or email. Another appointment will be made upon completion of story to interview on the feedback of writing the stories by using the framework given. 7 staffs from ITFO unit, ITMS department, have participated in the interview which took about 3 weeks. The background of interviewees is as follows:

NO.	NAME	YEARS IN UTP	POSITION	JOBSCOPE
1	MAIZURA MOHD ISMAIL	6 years	Support Services	IT Support/Help Desk
2	NURHASHIMAH HASHIM	6 years	Lab Facilities Technician (CIS department)	Lab Management
3	SALLEHAN MD DIN	15 years	Multimedia Services	AV Management
4	MIOR AFFENDY B	8 years	Multimedia	AV Management

	MIOR AZIZ		Services	
5	MOHD KHAIRUL B HASSAN BASARI	9 years	Multimedia Services	AV Management
6	MOHAMAD NIZAM B HAMDAN	9 months	Lab Facilities Technician (Chemical Engineering Department)	Lab Management
7	CHE AZIZI B CHE RUS	10 years	Support Services	IT Support/Help Desk

Below are the job descriptions for ITMS department positions:

IT Support/Help Desk:

- Provide software and hardware installation and maintenance for UTP staffs
- Configuring computer hardware operating systems and applications
- Monitoring computer systems
- Provide support services through telephone or email, including procedural documentation
- Take in queries about IT matters (online registration, portal, etc.) and provide answers or help

Lab Management:

- Performing laboratory tests in order to produce reliable and precise data to support experiments
- Preparing specimens and samples
- Constructing, maintaining and operating standard laboratory equipment
- Ensuring the laboratory is well-stocked and resourced
- Demonstrating practical procedures
- Following and ensuring strict safety procedures and safety checks.

Audio and Video (AV) Management:

- Provide AV set up and operations for events and functions

- Install and maintain AV equipment for classrooms, halls, meeting rooms etc.
- Secure, store and maintain AV equipment
- Coordinates and implements procedures for gathering and maintaining AV hardware equipment and software inventory data

Below is the usage of story construction process model:

NO.	NAME	FEEDBACK
1	MAIZURA MOHD ISMAIL	Time taken to complete story: Approximately 40 minutes Efficiency of model: The interviewee agreed that this story construction process model is very helpful. She mentioned that the articulation process is the most important and useful in story construction. This particular process eased her story construction. Difficulties while constructing story: None because her type of knowledge is episodic, thus, all process are essential for story construction. The story construction process model is said to be very efficient when creating her story. Recommendations for improvement: The interviewee felt that this framework is helpful enough to help in story construction. Thus, no recommendations given.
2	NURHASHIMAH HASHIM	Time taken to complete story: Approximately 2 hours Efficiency of model: The interviewee found that this model is simple and precise to be referred to when constructing stories. She agreed that this model is very efficient and important to ensure readers understand her stories well. Difficulties while constructing story: Since her type of knowledge is procedural, thus, the

		process of mapping and wrapping is quite difficult as some points have no relevant elaborations or description. Procedural knowledge is straight forward and understandable even without elaborations or additional description. Recommendations for improvement: The interviewee satisfied with the process model but only recommended to adjust mapping/wrapping process that can be used for different types of knowledge.
3	SALLEHAN MD DIN	Time taken to complete story: Approximately 1 hour Efficiency of model: The interviewee responded that this model is very useful for him to describe and express his knowledge on AV management. He felt that mapping/wrapping process is the most important steps where he can further explain in detail about his points very easily. He also can ensure each point will be understood well by the reader. Difficulties while constructing story: There are no difficulties in using the model to construct his story as he understood well how to follow the process. Recommendations for improvement: The interviewee expressed that there is no recommendation from him as he felt that this model is precise enough for knowledge constructor to understand and use it well.
4	MIOR AFFENDY B MIOR AZIZ	Time taken to complete story: Approximately 2 hours Efficiency of model: The interviewee felt that the process model is fairly efficient for him to construct his story. Some processes are very helpful and easy to follow. He even responded

		that he would never expect he could write a very constructive story. This is because the process model has guided him through the story construction. Difficulties while constructing story: There is one difficulty that he has faced which is during the mapping/wrapping steps. He was unsure on what information to match his points and finding the relevant elaborations for his points. Recommendations for improvement: He suggested to provide a clearer guidelines on mapping/wrapping steps with some examples.
5	MOHD KHAIRUL B HASSAN BASARI	Time taken to complete story: Approximately 20 minutes Efficiency of model: The interviewee agreed that this model is very efficient for him to construct his stories. Especially, for declarative knowledge type, he felt that mapping/wrapping has helped him a lot to define his knowledge so that other person can receive the knowledge well. Difficulties while constructing story: He felt that he did not face any difficulties while using the process model as each steps in the model is understandable and easy to follow. Recommendations for improvement: There are no recommendations from him as to him, the process model is sufficient and very efficient to construct his story.
6	MOHAMAD NIZAM B HAMDAN	Time taken to complete story: 1 day Efficiency of model: He agreed that this model is very helpful and efficient in constructing his story. This is because he found that he

		can construct a more structured story with these guidelines. He explained that he could never express a story in a more constructive way without knowing this process model. Difficulties while constructing story: The interviewee has faced a difficulty when writing the overall stories because having a procedural knowledge, he was not confident if the reader can understand the procedures through this story. Recommendations for improvement: He recommended to have a flowchart as the final story as it is easier to understand procedural knowledge through this flowchart.
7	CHE AZIZI B CHE RUS	Time taken to complete story: Approximately 20 minutes Efficiency of model: The interviewee strongly agreed that this model is very efficient while constructing his story. Since his knowledge type is episodic, experience-based stories are usually scattered and some points may be missing. He felt that articulation of knowledge source steps has been very helpful for him to ensure no missing points. Difficulties while constructing story: There are no difficulties faced by this interviewee while constructing his story. Recommendations for improvement: There are no recommendations from him as he was satisfied enough with this process model.

Different types of knowledge faced different kinds of situation. Thus, experiences and knowledge differ from each other. For example, procedural knowledge comes in steps while declarative or experience knowledge is more on concepts and philosophies. From this interviewee, it can be clearly seen that episodic knowledge needs more elaborations or descriptions than procedural knowledge. In contrast,

procedural knowledge can easily arrange the points in sequence as compared to episodic knowledge. Declarative knowledge may involve both kinds of procedural and episodic knowledge. Thus, this story construction process model has different degree of usage depending on the knowledge type.

Declarative knowledge can be created the easiest as it needs to develop sequence as well as providing descriptions. Episodic knowledge may find difficulties in arranging the points or concept as some concept has no sequence. Procedural knowledge is simplest to construct but lack of further descriptions and reading a procedural knowledge story might be too complex or confusing.

In conclusion, this process model has been agreed by this first group of knowledge constructor that it is very efficient and helpful in constructing stories. However, there are still improvements to be made. This is to ensure the adaptability and flexibility of the process model for those three types of knowledge – procedure, declarative and episodic.

4.3 Prototype

The prototype for this project would be NarrateC that includes Knowledge Story Construction Process Model to help in constructing stories in the system. The components of the system are as follows:

1. Account Management
    a. Register account
    b. Edit account
2. Create story
    a. Create/Edit/Publish story
    b. Tagging functions
3. View story
    a. Search functions
    b. Download facilities
    c. Comments and ratings

The prototype is still under development. Figure 4.28 – Figure 4.33 show some GUI interface of the system with regards to the knowledge story construction process. Figure 3.4 shows the general flowchart of the whole system.

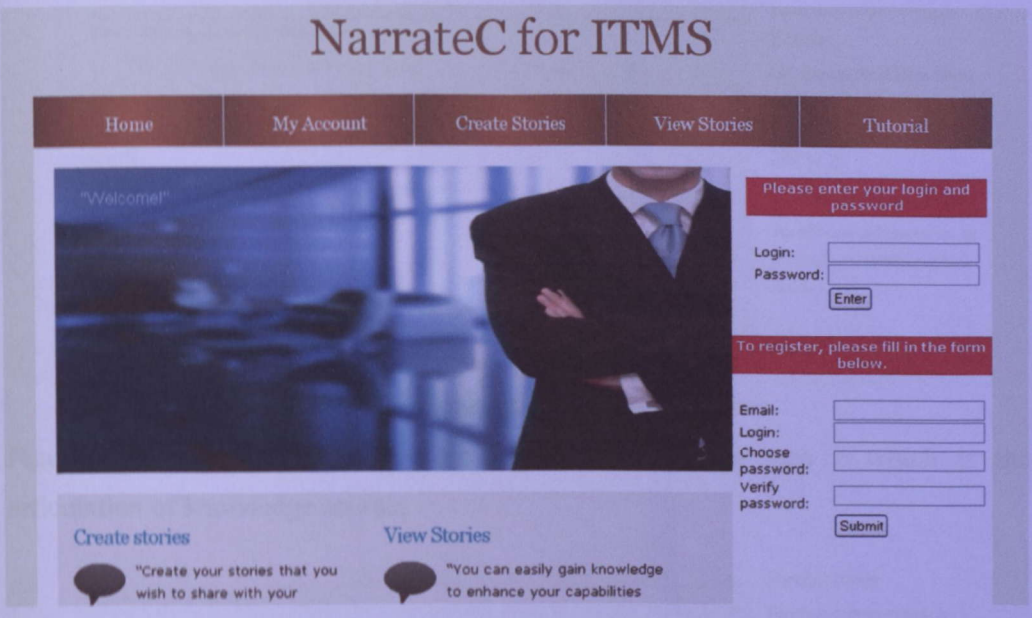

Figure 4.28 *Homepage*

Figure 4.28 shows the homepage of NarrateC which consists of registration form, login form and menu tabs for home, my account, create stories, view stories and tutorial.

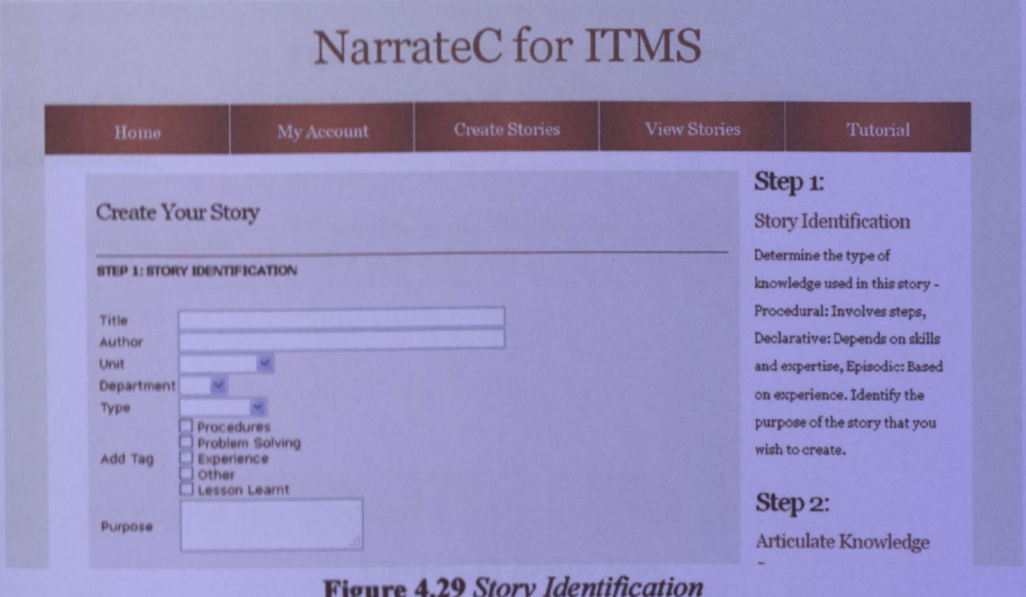

Figure 4.29 *Story Identification*

Figure 4.29 shows the Create Stories page focusing on the first step on story construction which is story identification.

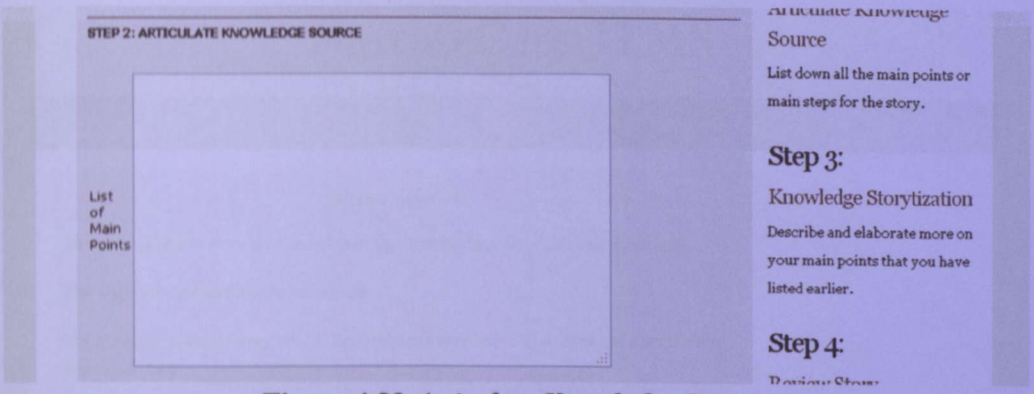

Figure 4.30 *Articulate Knowledge Source*

Figure 4.30 shows the Create Stories page focusing on step 2 which is the articulation of knowledge source.

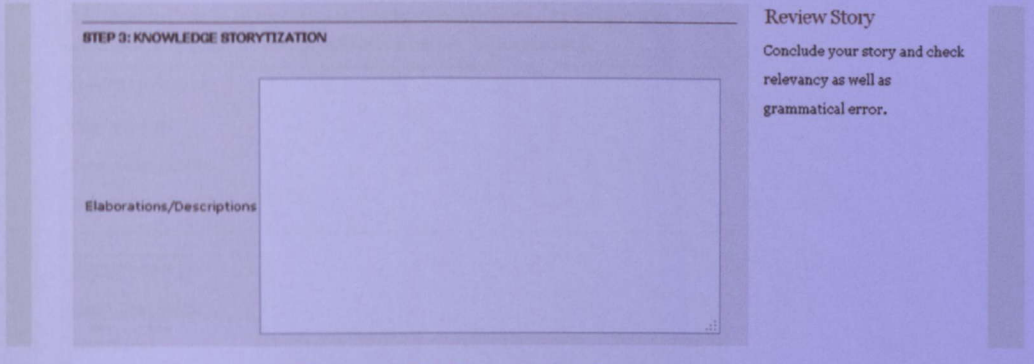

Figure 4.31 *Knowledge Storytization*

Figure 4.31 shows the Create Stories page focusing on step 3 which is the knowledge storytization.

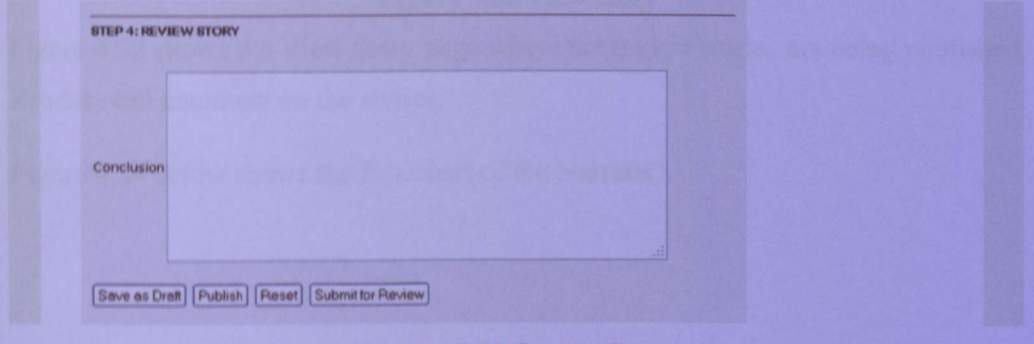

Figure 4.32 *Review Story*

Figure 4.32 shows the Create Stories page focusing on step 4 which is review story.

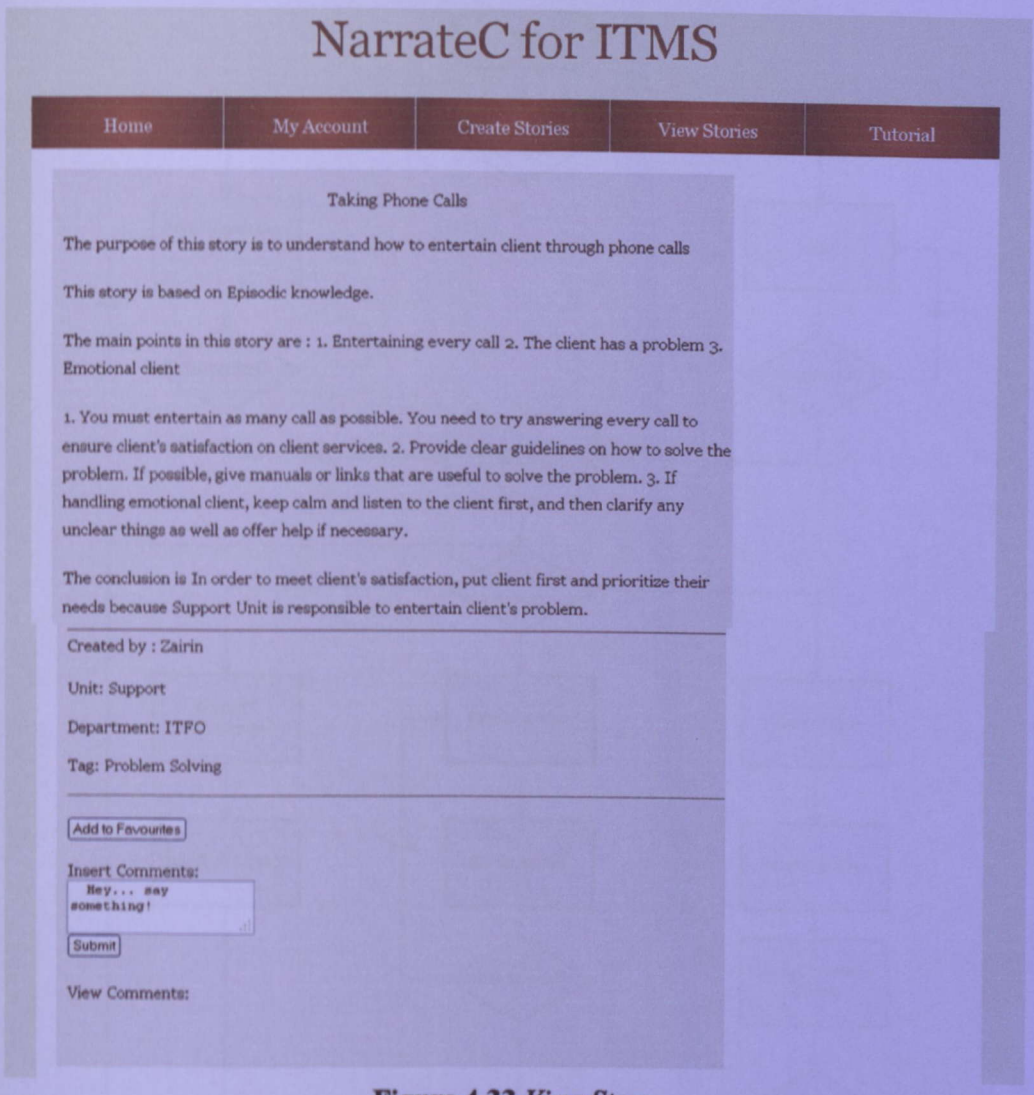

Figure 4.33 *View Story*

Figure 4.33 shows the View Story page where the review stories are being published. Readers can comment on the stories.

Figure 4.34 below shows the flowchart of the NarrateC.

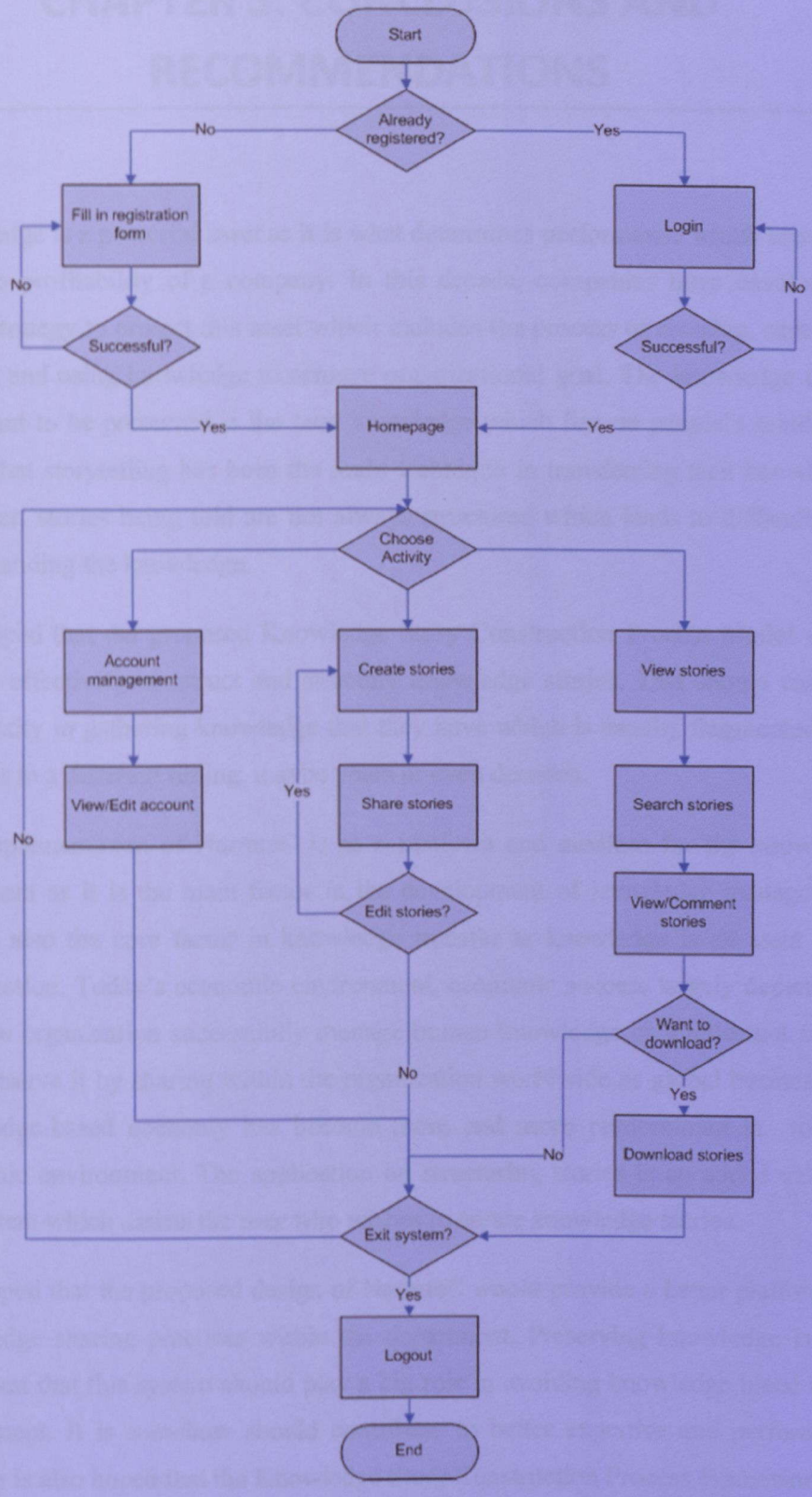

Figure 4.34 *General flowchart of the system*

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

Knowledge is a powerful asset as it is what determines performance which somehow leads to profitability of a company. In this decade, companies have developed a better strategy to protect this asset which includes the process of creating, capturing, sharing and using knowledge to achieve organizational goal. The knowledge that is important to be preserved is the tacit knowledge which lies on people's mind. It is found that storytelling has been the main technique in transferring tacit knowledge. However, stories being told are not always structured which leads to difficulties in understanding the knowledge.

It is hoped that the proposed Knowledge Story Construction Process Model would help to effectively construct and structure knowledge stories. This should ease the complexity in gathering knowledge that they have which is usually fragmented as it happens in a different timing, maybe years or even decades.

The implementation of NarrateC is as a platform and medium for the knowledge movement as it is the main factor in the development of knowledge management. This is also the core factor in knowledge transfer as knowledge is an asset to an organization. Today's economic environment, economic success largely depends on how the organization successfully manage human knowledge or intellectual capital and preserve it by sharing within the organization worldwide as global business and knowledge-based economy has become more and more predominant in today's economic environment. The application on structuring stories is an added value to the system which assists the user who wishes to create knowledge stories.

It is hoped that the proposed design of NarrateC would provide a better platform for knowledge sharing practices within the department. Preserving knowledge is very important that this system should play a big role in avoiding knowledge bleed in the department. It is somehow should contribute to better expertise and performance level. It is also hoped that the Knowledge Story Construction Process Framework can assist the knowledge capturing and sharing in the NarrateC.

Recommendation for this project would be to further experiment on the effectiveness of the NarrateC in IT department. This would be testing a target group on how they use the system within a period of time. Analysis of the experiment should be on frequency of usage or quality of knowledge shared.

Other recommendation for future work would be to implement the usage of Knowledge Story Construction Process Framework and Knowledge Story Construction Process Model to a group that is not in the IT background. From this, we could see to what extend both framework and model can be used and what are the limitations. Both framework and model also may need some improvement if they were to be implemented in this target group.

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APPENDIX 1: Final Year Project 2 Gantt Chart

Work Breakdown	Items	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14
		26/1 - 29/1	30/1 - 5/2	6/2 - 12/2	13/2 - 19/2	20/2 - 26/2	27/2 - 4/3	5/3 - 11/3	12/3 - 18/3	19/3 - 25/3	26/3- 1/4	9/4 - 8/4	9/4 - 15/4	16/4 - 22/4	23/4 - 29/4
Planning	Discussion with SV	X	X	X	X	X	O	X	X	X	X	X	X		
	Prepare Gantt Chart	X	X												
Data Collection	Set interview appointment		X	X											
	Interview with ITMS			X	X	X	X								
	Distributing survey questions		X												
Analysis of interview data	Data verification				X	X									
	Data compilation and identifying results				X	X									
	Data documentation - to structure data					X	X								
Analysis of NMS	Understand existing system - how they share their knowledge					X	X								
	Evaluating the feasibility of proposed system					X	X								
Design / Development	Draft system flow			X	X										
	Design system components					X									
	Design system prototype						X	X	X	X	X				
	System testing										X	X			
	Evaluate system										X	X			
Important Dates	Progress Report							X							
	Pre-EDX											X			
	Dissertation														
	VIVA														
	Final Dissertation														

APPENDIX 2: Survey Questions

Knowledge Sharing Method by using Storytelling (Kaedah Perkongsian Pengetahuan dengan menggunakan Penceritaan)

Storytelling is one of the effective method to share knowledge story between one another. Knowledge story can be based on experience and insights of a person which may help other people to perform their tasks. For example, an IT personnel shares his or her story in how to solve a specific user problem. This project aims to capture knowledge stories within ITMS department by using storytelling. The purpose of this survey is to understand the culture, technology and perception of ITMS department on the usage of storytelling as knowledge sharing method. Penceritaan adalah satu daripada cara yang berkesan dalam berkongsi cerita pengetahuan antara satu sama lain. Cerita pengetahuan adalah berdasarkan pengalaman dan pandangan seseorang yang mungkin mampu membantu orang lain dalam melaksanakan tugas mereka. Sebagai contoh, seorang kakitangan IT berkongsi cerita tentang bagaimana dia menyelesaikan masalah pengguna. Matlamat projek ini adalah untuk memperoleh cerita-cerita pengetahuan dalam kalangan jabatan ITMS dengan menggunakan penceritaan. Tujuan kaji selidik ini adalah untuk memahami budaya, teknologi dan tanggapan jabatan ITMS terhadap penggunaan penceritaan sebagai kaedah perkongsian pengetahuan.

* Required

Section/Seksyen 1: Background / Latar Belakang

The objective of this set of questions is to understand the background of respondent (Objektif set soalan ini adalah untuk memahami latar belakang responden)

Department / Jabatan *

Unit / Unit *

Position / Pangkat *

Level / Peringkat *

- ○ Executive / Eksekutif
- ○ Non-executive / Bukan Eksekutif

Kindly choose one answer for each question below / Sila pilih satu jawapan untuk setiap soalan berikut: *

	< 1 year/tahun	1 - 3 years/tahun	3 - 5 years/tahun	> 5 years/tahun
How long have you been with this department? (Berapa lamakah anda berada di dalam jabatan ini?)	○	○	○	○
How many years of working experience in UTP? (Berapa tahun pengalaman bekerja di UTP?)	○	○	○	○
How many years of experience in IT field (Berapa tahun pengalaman di dalam bidang IT?)	○	○	○	○

Section/Seksyen 2: Culture / Budaya

The objective of this set of questions is to understand the role of organization culture in sharing knowledge stories (Objektif set soalan ini adalah untuk memahami peranan budaya organisasi dalam berkongsi pengetahuan)

Kindly choose one answer for each question below / Sila pilih satu jawapan untuk setiap soalan berikut: *

	Strongly Agree / Sangat Seruju	Agree /Setuju	Neutral	Disagree / Tidak Setuju	Strongly Disagree / Sangat Tidak Setuju
I perceive knowledge as an important asset for my department (Saya beranggapan pengetahuan sebagai aset yang penting untuk jabatan saya))	○	○	○	○	○
Tacit knowledge such as experiences and insights are more important than explicit knowledge such as manuals and documents	○	○	○	○	○

	Strongly Agree / Sangat Seruju	Agree /Setuju	Neutral	Disagree / Tidak Setuju	Strongly Disagree / Sangat Tidak Setuju
(Pengetahuan tersirat seperti pengalaman dan pandangan adalah lebih penting daripada pengetahuan tersurat seperti manual dan dokumen)					
I rely on my tacit knowledge to do my job (Saya bergantung kepada pengetahuan tersirat dalam melaksanakan tugas saya)	○	○	○	○	○
I rely on my tacit knowledge MORE than explicit knowledge in doing my job (Saya bergantung kepada pengetahuan tersirat LEBIH daripada pengetahuan tersurat dalam melaksanakan tugas saya)	○	○	○	○	○
The culture of sharing of work-related stories is strong in my department (Budaya berkongsi cerita yang berkaitan dengan kerja adalah kuat dalam jabatan saya)	○	○	○	○	○
Most of the knowledge stories that I listened to at work does help me in doing my job (Kebanyakan cerita pengetahuan yang saya dengari ketika	○	○	○	○	○

	Strongly Agree / Sangat Seruju	Agree /Setuju	Neutral	Disagree / Tidak Setuju	Strongly Disagree / Sangat Tidak Setuju
bekerja dapat membantu saya dalam melaksanakan tugas saya)					

Section/Seksyen 3: Social Aspect in Knowledge Sharing Practices / Aspek Sosial dalam Amalan Perkongsian Pengetahuan

The objective of this set of questions is to understand the role of social settings in sharing knowledge stories (Objektif set soalan ini adalah untuk memahami suasana sosial dalam perkongsian cerita pengetahuan)

Kindly choose one answer for each question below / Sila pilih satu jawapan untuk setiap soalan berikut: *

	Strongly Agree / Sangat Setuju	Agree / Setuju	Neutral	Disagree / Tidak Setuju	Strongly Disagree / Sangat Tidak Setuju
Work-related stories are shared only during social gatherings such as lunch breaks, at pantry, etc. (Cerita yang berkaitan dengan kerja hanya dikongsi ketika perhimpunan sosial seperti waktu rehat, di pantry, dsb.)	○	○	○	○	○
Work-related stories are seldom shared during formal department meeting (Cerita yang berkaitan dengan kerja jarang dikongsi di dalam mesyuarat rasmi jabatan)	○	○	○	○	○
I am willing to share my stories about the	○	○	○	○	○

	Strongly Agree / Sangat Setuju	Agree / Setuju	Neutral	Disagree / Tidak Setuju	Strongly Disagree / Sangat Tidak Setuju
experience I gained through training or problems solved with my colleagues in social settings (Saya sudi berkongsi cerita tentang pengalaman yang saya peroleh melalui latihan atau penyelesaian masalah bersama rakan setugas saya dalam suasana sosial)					
I am willing to share my stories about the experience I gained through training or problems solved with my colleagues in formal department meetings (Saya sudi berkongsi cerita tentang pengalaman yang saya peroleh melalui latihan atau penyelesaian masalah bersama rakan setugas saya dalam mesyuarat rasmi jabatan)	○	○	○	○	○
I fear that if I share my knowledge, it will affect my job security (Saya bimbang sekiranya saya berkongsi pengetahuan saya, keselamatan pekerjaan saya terjejas)	○	○	○	○	○

	Strongly Agree / Sangat Setuju	Agree / Setuju	Neutral	Disagree / Tidak Setuju	Strongly Disagree / Sangat Tidak Setuju
I will take the opportunity in a social setting to hear work-related stories (Saya akan mengambil peluang dalam suasan sosial untuk mendengar cerita yang berkaitan dengan kerja)	○	○	○	○	○
I am interested to hear work-related stories during department meetings (Saya berminat untuk mendengar cerita yang berkaitan dengan kerja ketika mesyuarat jabatan)	○	○	○	○	○

Section/Seksyen 4: Technology Aspect in Knowledge Sharing Practices / Aspek Teknologi dalam Amalan Perkongsian Pengetahuan

The objective of this set of questions is to understand the role of technology in disseminating knowledge stories (Objektif set soalan ini adalah untuk memahami peranan teknologi dalam menyebarkan pengetahuan)

Kindly choose one answer for each question below / Sila pilih satu jawapan untuk setiap soalan berikut: *

	Strongly Agree / Sangat Setuju	Agree / Setuju	Neutral	Disagree / Tidak Setuju	Strongly Disagree / Sangat Tidak Setuju
Work-related stories are shared via email (Cerita yang berkaitan dengan kerja adalah dikongsi melalui e-mel)	○	○	○	○	○

	Strongly Agree / Sangat Setuju	Agree / Setuju	Neutral	Disagree / Tidak Setuju	Strongly Disagree / Sangat Tidak Setuju
Work-related stories shared via the intranet (Cerita yang berkaitan dengan kerja adalah dikongsi melalui intranet)	○	○	○	○	○
I have never shared stories via technological platforms (Saya tidak pernah berkongsi cerita melalui platform teknologi)	○	○	○	○	○
Work-related stories are shared within 24 hours when requested (Cerita yang berkaitan dengan kerja adalah dikongsi dalam masa 24 jam apabila diminta))	○	○	○	○	○

Section/Seksyen 5: Storytelling in Knowledge Sharing Practices / Penceritaan dalam Amalan Perkongsian Pengetahuan

The objective of this set of questions is to see the respondent's perception on the use of knowledge story as a tool to transfer or share knowledge (Objektif set soalan inin adalah untuk melihat tanggapan responden terhadap penggunaan cerita pengetahuan sebagai alat untuk memindahkan atau berkongsi pengetahuan)

Kindly choose one answer for each question below / Sila pilih satu jawapan untuk setiap soalan berikut: *

	Strongly Agree / Sangat Setuju	Agree / Setuju	Neutral	Disagree / Tidak Setuju	Strongly Disagree / Sangat Tidak Setuju
I perceive that storytelling is an effective tool in sharing	○	○	○	○	○

	Strongly Agree / Sangat Setuju	Agree / Setuju	Neutral	Disagree / Tidak Setuju	Strongly Disagree / Sangat Tidak Setuju
work-related knowledge (Saya beranggapan bahawa penceritaan adalah alat yang berkesan dalam perkongsian pengetahuan berkaitan dengan kerja))					
I believe stories complements explicit knowledge (Saya percaya cerita melengkapi pengetahuan tersurat)	○	○	○	○	○
If I were to ask to tell stories in a formal platform, I would have difficulties in telling the stories even with preparation (Jika saya diminta untuk bercerita dalam platform rasmi, saya akan mengalami kesusahan dalam menyampaikan cerita tersebut walaupun persiapan telah dilaksanakan)	○	○	○	○	○
If I were to ask to tell stories in a formal platform, I would feel uncertain if the audience understand the knowledge that I intend to tell (Jika saya diminta untuk bercerita dalam platform rasmi, saya akan berasa tidak pasti sekiranya	○	○	○	○	○

	Strongly Agree / Sangat Setuju	Agree / Setuju	Neutral	Disagree / Tidak Setuju	Strongly Disagree / Sangat Tidak Setuju
penonton memahami pengetahuan yang ingin saya sampaikan)					
If I were to write a story about work, I think that I would have difficulties in writing it (Jika saya diminta untuk menulis sebuat cerita tentang kerja, saya akan mengalami kesusahan dalam menulis cerita tersebut)	○	○	○	○	○
If I were to write a story about work, I feel uncertain whether the readers would understand that knowledge that I intend to tell (JIka saya diminta untuk menulis sebuah cerita tentang kerja, saya akan berasa tidak pasti sekiranya pembaca akan memahami pengetahuan yang ingin saya sampaikan)	○	○	○	○	○

-Thank you / Terima kasih-

Submit

APPENDIX 3: Interview Protocol

INTERVIEW PROTOCOL

Interviewee Name:_____	Title:_____
Department:_____	Years of Service:_____
Contact no.:_____ Email:_____	Date:_____
Interviewed by:_____	Duration: _____ (Start) - _____ (End)

INTRODUCTION

First of all, thank you for spending your time for me to conduct this interview with you. I would like to outline our interview today so that you have a clear view on the direction of this interview. Firstly, I would like to explain on the purpose of this interview, followed by brief information on the project that I am currently working on. Next, I would like to understand your work background and to figure out your nature of work as well as your knowledge regarding your work tasks. After that, I would like to explain a framework from my research that will relate to the said knowledge. Finally, I would like to request for your input that relates to the framework and said knowledge.

Commonly, people share information through storytelling as it is one of the effective ways to transfer information to one another. This is because storytelling consists of purpose of story, sequence of events, lesson learned etc. Through this storytelling, people will tend to make better sense of how the story relates with them. However, stories being told are not always structured. For example, when the storyteller did not follow the sequence of events, it may cause confusion to the audience on the story timeline. Implementation of the said framework may help storyteller to construct stories.

The purpose of this interview is to figure out the effectiveness of the framework to construct stories. This interview should take about 15 minutes, depending on your understanding on the subject matter. You may ask questions or request to repeat explanation during the conversation.

INTERVIEWEE BACKGROUND

What is your position in this department?

How many years of experience working in this department?

Can you explain your job description?

Can you describe one of your daily tasks in this department?

If procedural: Can you explain the steps in completing the task?

If declarative: Can you explain how do you complete the task?

If episodic: Can you explain your challenges in completing the task and how do you overcome them.

Imagine if you are to leave this department and handover your task to a new person, you will most likely need to train him/her and this requires time and more meet ups. What if there is not enough time for the training? The new person may refer to the manuals or work instructions but how would he/she know how to handle situations beyond what is in the documents. This is where you need to develop stories and document it so that the new person can learn from it or refer to whenever he/she needs it.

FRAMEWORK

Your explanation on the task just now can be told in a more structured way by using the framework that I will explain next. This may help audience to better digest the stories and learn from them. There are four main processes of the framework which are: identification of purpose, articulate knowledge source, knowledge storytization and review story.

Identification of purpose: This is where you define the purpose of the story you intend to share. You may want to specify why this story can give benefits to others and why people should understand the story.

Articulate knowledge source: This process is where you recall the content of the story and express the significance of the story. The content may not be in sequence as it will be arranged in the next process. In this process, you will also need to identify the roles, location, materials or anything else that involved in the story.

Knowledge storytization: There are three components under this process which are developing sequence of events, mapping or wrapping knowledge, and writing events. This is where the stories are constructed and developed.

Developing sequence of events: You need to identify the timeline of the stories and the arrangement of the contents according to the timeline. You can also arrange the contents by steps or stages.

Mapping or wrapping knowledge: You will then need to map or match the contents according to the timeline and arrange in sequence. You will also need to match with the roles, location, materials etc. that you have identified earlier. If arranging your content according to the timeline is not relevant, you may want to wrap or classify the contents into different concepts or components. For example, you may want to differentiate how to complete a task when given a short time and vice versa.

Writing events: This is where you write the whole story and develop lesson learned from the story. You need to make sure the story has 3 major classifications which are beginning, middle and ending.

Review story: This is where you finalize the story to ensure no grammatical errors, existence of necessary knowledge in the story as well as whether the whole story matches the purpose stated earlier.

INPUT REQUEST

Therefore, I would like to request your kind help to write a story regarding one of the tasks you have explained earlier by using this framework as a guideline to develop your story. You are provided with brief information on the processes for your reference as well as a template for you to write the story. I would also like to inform you that this story will be the sample story in my project documentation as well as in the proposed system in the project. Kindly be informed that you may write the story in English or Malay.

It is highly appreciated if you can complete the story in 3 to 4 days from now. Once completed, you may inform me through the phone or email. You may also contact me if you have any inquiries or problems while writing the story. Please be informed that I will need to make another appointment to interview on your feedback of writing the stories by using the framework given.

Thank you for your cooperation.

FEEDBACK INTERVIEW QUESTIONS:

1. Time taken to complete story
2. Efficiency of model
3. Difficulties while constructing story
4. Recommendations for improvement

TEMPLATE

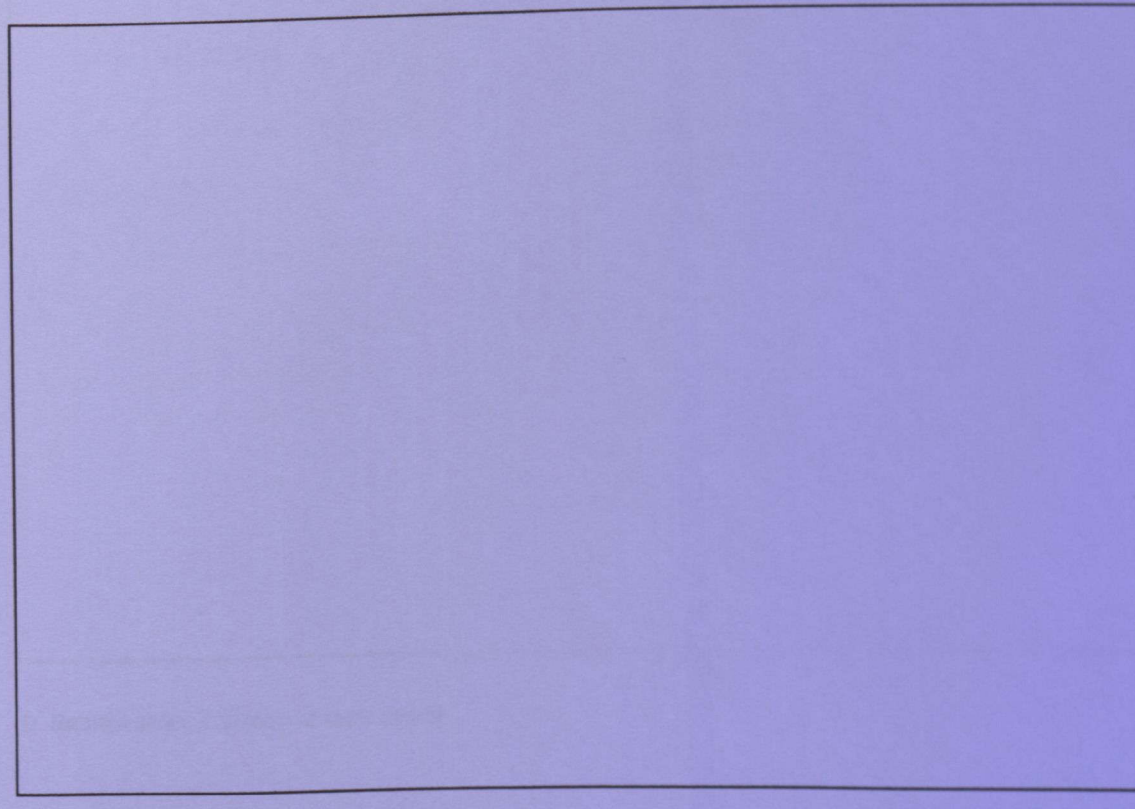
A. Identification of Purpose / *Mengenal pasti tujuan cerita*

B. Articulate knowledge source / *Artikulasi sumber pengetahuan*

C. Knowledge Storytization

1. Develop Sequence of Events / *Membangunkan aliran peristiwa*

2. Map OR Wrap Knowledge / *Padankan pengetahuan dengan peristiwa*



3. Write events / *Tulis peristiwa*

D. Review story / *Semak semula cerita*

APPENDIX 4: Examples of Knowledge Story

INTERVIEW OUTCOMES

Interviewee Name: **MAIZURA BINTI MOHD ISMAIL**	Title: **SUPPORT SERVICES**
Unit: **ICT Facilities & Operations (ITFO)**	Years of Service: **6 years**
Contact no.: **05 368 8862** Email: maizura@petronas.com.my	Date: **13/2/2012**
Interviewed by: **NURZAIRIN BINTI MUSTAFFA**	Duration: **1400** (Start) – **1415** (End)

INTERVIEWEE BACKGROUND

JOB DESCRIPTION:

- Provide software and hardware installation and maintenance for UTP staffs
- Configuring computer hardware operating systems and applications
- Monitoring computer systems
- Provide support services through telephone or email, including procedural documentation
- Take in queries about IT matters (online registration, portal, etc.) and provide answers or help

EXAMPLE OF TASK: Entertain request to access Work For Portal Application

KNOWLEDGE STORY

A. Identification of Purpose / *Mengenal pasti tujuan cerita*

- To handle report/problem correctly/accordingly
- To not miss any important details/info
- To be able to handle various situation
    - Handling emotional user
    - Handling important user
    - Handling repeated problem

B. Articulate knowledge source / *Artikulasi sumber pengetahuan*

- SOP/Procedure
- Step by step
- Search through internet
- Common sense
- Experience
- colleague

C. Knowledge Storytization

1. Develop Sequence of Events / *Membangunkan aliran peristiwa*

Request work for portal access:

- User call to make WFP application
- Ask user to fill up WFP form
- Email the form to user or advise user to download from sharing drive
- Inform user the column used to be filled, advise user do not mistaken the form with user registration form
- Explain to user the service is back-charge to department
- Explain to user how to use the service
    - Example: username & password

2. Map OR Wrap Knowledge / *Padankan pengetahuan dengan peristiwa*

Request work for portal access:

- User call to make WFP application
    - Listen carefully to avoid miscommunication or missing any important details
- Ask user to fill up WFP
- Email the form to user or advise user to download from sharing drive
- Inform user the column used to be filled, advise user do not mistaken the form with user registration form
- Explain to user the service is back-charge to department
- Explain to user how to use the service
    - Example: username & password
- Make sure to give clear and understandable instructions
- If were to handle with emotional user, we need to be calm and listen first to what they have to say and then make clear clarifications on how the process will be, what they need to do and what actions will we take.
- Apologize if the mistake is ours but defend if it is not our mistake, however, quickly solve the problem or give guidelines on how they can solve the problem

3. Write events / *Tulis peristiwa*

This story is about how to entertain request to access Work for Portal Application. The purpose of this story is to understand how to handle report or problem appropriately. This is also for a preparation to handle various situations along the process such as emotional user and repeated problem.

User may request through an email or a phone call. User will be asked to fill WFP application form which can be downloaded from sharing drive. User must be informed which column to be filled and must not mistaken the form with registration form. User should be explained on how to use the service such as how to input username and password.

You must make sure to give clear and understandable instructions to avoid misunderstandingor missing an important detail. If you are to handle with emotional user, you need to be calm and listen first to what they have to say and then make clear clarifications on how the process will be, what they need to do and what actions will we take. You should admit and apologize if the mistake is yours but defend if it is not, however, quickly solve the problem or give guidelines on how they can solve the problem.

D. Review story / *Semak semula cerita*

POST INTERVIEW COMMENTS

Efficiency of model:

The interviewee agreed that this story construction process model is very helpful. She mentioned that the articulation process is the most important and useful in story construction. This particular process eased her story construction.

Difficulties while constructing story:

None because her type of knowledge is episodic, thus, all process are essential for story construction. The story construction process model is said to be very efficient when creating her story.

Recommendations for improvement:

The interviewee felt that this framework is helpful enough to help in story construction. Thus, no recommendations are given.

INTERVIEW OUTCOMES

Interviewee Name: **MIOR AFFENDY B MIOR AZIZ**	Title: **MULTIMEDIA**
Unit: **ICT Facilities & Operations (ITFO)**	Years of Service: **8 years**
Contact no.: **05 368 8876** Email: mioraffendy@petronas.com.my	Date: **23/2/2012**
Interviewed by: **NURZAIRIN BINTI MUSTAFFA**	Duration: **1100** (Start) – **1115** (End)

INTERVIEWEE BACKGROUND

JOB DESCRIPTION: AV management, event management

EXAMPLE OF TASK: class, hall, meeting

KNOWLEDGE STORY

A. Identification of Purpose / *Mengenal pasti tujuan cerita*

- LCD projector tidak dapat digunakan

B. Articulate knowledge source / *Artikulasi sumber pengetahuan*

- Memeriksa bekalan kuasa (power socket)
- Melihat amaran yang terpapar (warning error)

C. Knowledge Storytization

1. Develop Sequence of Events / *Membangunkan aliran peristiwa*

- LCD projector tidak boleh digunakan
- Memeriksa bekalan kuasa
- Melihat warning error
- Mengenal pasti tindakan yang perlu diambil

  Mengenal pasti peralatan dan bahagian yang perlu ditukar

2. Map OR Wrap Knowledge / *Padankan pengetahuan dengan peristiwa*

- Memeriksa bekalan kuasa
  - Harus dipastilkan socket kuasa mempunyai bekalan kuasa yang mencukupi
  - Fius pada power cable berkeadaan baik
- Melihat warning error
  - Sekiranya terdapat masalah terdapat warning error LED pada LCD projector
  - Rujuk manual pengguna

3. Write events / *Tulis peristiwa*

Sekiranya terdapat laporan mengenai kerosakan @ malfunction LCD projector
- Pastikan wujud bekalan kuasa
- Periksa warning error yang terpapar pada screen @ pada LED projector

Sekiranya kerosakan lamp hours reach limit
- Matikan bekalan kuasa
- Tukar lamp (mengikut specification pengeluar)
- Tukar filter (rujuk manual peralatan)

Jika LCD projector tidak dapat dihidupkan
- Pastikan bekalan kuasa mencukupi (diuji dengan multi?)
- Tanggalkan / keluarkan LCD projector tersebut untuk dihantar ke pusat service
- Kemungkinan power module blow

Jika LCD projector tidak memaparkan image
- Pastikan video splitter yang ada mempunyai bekalan kuasa
- Pastikan sambungan vga cable dibuat dengan betul
- Sekiranya sambungan dibuat menerusi laptop, tukar resolution pada svga 1024x764

D. Review story / *Semak semula cerita*

POST INTERVIEW COMMENTS

Time taken to complete story:
Approximately 2 hours

Efficiency of model:
The interviewee felt that the process model is fairly efficient for him to construct his story. Some processes are very helpful and easy to follow. He even responded that he would never expect he could write a very constructive story. This is because the process model has guided him through the story construction.

Difficulties while constructing story:
There is one difficulty that he has faced which is during the mapping/wrapping steps. He was unsure on what information to match his points and finding the relevant elaborations for his points.

Recommendations for improvement:

He suggested providing a clearer guidelines on mapping/wrapping steps with some examples.

INTERVIEW OUTCOMES

Interviewee Name: **MOHAMAD NIZAM B. HAMDAN**	Title: **LAB FACILITIES TECHNICIAN**
Unit: **ICT Facilities & Operations (ITFO)**	Years of Service: **9 months**
Contact no.: **05 3688829** Email: nizam.hamdan@petronas.com.my	Date: **29/2/2012**
Interviewed by: **NURZAIRIN BINTI MUSTAFFA**	Duration: **1100** (Start) – **1115** (End)

INTERVIEWEE BACKGROUND

JOB DESCRIPTION: Lab Maintenance Chemical Department

EXAMPLE OF TASK: PC testing

KNOWLEDGE STORY

A. Identification of Purpose / *Mengenal pasti tujuan cerita*

- Untuk memastikan program icon6, promax dan Autocad 2011 berjalan dengan baik
- Unutuk memastikan program Ansys14 dan Numeca berjalan dengan baik
- Komputer tiada paparan (no display)

B. Articulate knowledge source / *Artikulasi sumber pengetahuan*

- Program icon6, promax dan Autocad 2011 berada di dalam satu server yang sama (lokasi terletak dalam bilik 05-02-14)
- Program Ansys 14 dan Numeca berada dalam satu server yang saman (160.0.225.12)
- Memastikan soket power dalam keadaan on bagi monitor dan CPU. Cuba hidupkan PC dan melihat sama ada CPU atau monitor yang tidak berfungsi

C. Knowledge Storytization

1. Develop Sequence of Events / *Membangunkan aliran peristiwa*

- Sekiranya lab 05-02-12 tidak boleh menjalankan program icon 6, promax dan Autocad 2011, technician perlu memastikan server di bilik 05-02-14 dalam status connected dengan membuat ping ke address 160.0.75.188
- Sekirannya lab 05-02-12/05-02-07 tidak boleh menjalankan program Ansys 14 dan Numeca, technician perlu memastikan server di pusat data (Chancellor Complex) dalam status connected dengan membuat ping ke address 160.0.225.12
- Sekiranya terdapat bunyi (beep), technician perlu membuka CPU untuk memeriksa keadaan RAM dan peralatan lain didalamnya

2. Map OR Wrap Knowledge / *Padankan pengetahuan dengan peristiwa*

- Memastikan server di bilik 05-02-14 sentiasa dalam keadaan baik. Melihat status connection pada server tersebut dengan membuat ping pada computer yang lain (contoh: ping ke 160.0.75.1/160.0.75.254)
- Menghubungi En. Ruslan sekiranya program Ansys 14 dan Numeca tidak boleh digunakan (sama ada server down atau Numeca expired. 05-3687482
- Jika masih tiada paparan, kemungkinan motherboard dan processor mengalami kerosakan. Perlu menghubungi vendor sekiranya masih di dlam jaminan untuk tujuan pembaikan. Jika peralatan tersebut sudah tamat jaminan, technician perlu mencari vendor yang boleh membaiki kerosakan tersebut atau membeli sahaja peralatan yang rosak itu.

3. Write events / *Tulis peristiwa*

1. Untuk memastikan program icon6, promax dan Autocad 2011 berjalan dengan baik
    - Program icon6, promax dan Autocad 2011 berada di dalam satu server yang sama (lokasi terletak dalam bilik 05-02-14)
    - Sekiranya lab 05-02-12 tidak boleh menjalankan program icon 6, promax dan Autocad 2011, technician perlu memastikan server di bilik 05-02-14 dalam status connected dengan membuat ping ke address 160.0.75.188
    - Memastikan server di bilik 05-02-14 sentiasa dalam keadaan baik. Melihat status connection pada server tersebut dengan membuat ping pada computer yang lain (contoh: ping ke 160.0.75.1/160.0.75.254)

2. Unutuk memastikan program Ansys14 dan Numeca berjalan dengan baik
    - Program Ansys 14 dan Numeca berada dalam satu server yang saman (160.0.225.12)
    - Sekirannya lab 05-02-12/05-02-07 tidak boleh menjalankan program Ansys 14 dan Numeca, technician perlu memastikan server di pusat data (Chancellor Complex) dalam status connected dengan membuat ping ke address 160.0.225.12
    - Menghubungi En. Ruslan sekiranya program Ansys 14 dan Numeca tidak boleh digunakan (sama ada server down atau Numeca expired. 05-3687482

3. Komputer tiada paparan (no display)
    - Memastikan soket power dalam keadaan on bagi monitor dan CPU. Cuba hidupkan PC dan melihat sama ada CPU atau monitor yang tidak berfungsi
    - Sekiranya terdapat bunyi (beep), technician perlu membuka CPU untuk memeriksa keadaan RAM dan peralatan lain didalamnya
    - Jika masih tiada paparan, kemungkinan motherboard dan processor mengalami kerosakan. Perlu menghubungi vendor sekiranya masih di dlam jaminan untuk tujuan pembaikan. Jika peralatan tersebut sudah tamat jaminan, technician perlu mencari vendor yang boleh membaiki kerosakan tersebut atau membeli sahaja peralatan yang rosak itu.

POST INTERVIEW COMMENTS

Time taken to complete story:

1 day

Efficiency of model:

He agreed that this model is very helpful and efficient in constructing his story. This is because he found that he can construct a more structured story with these guidelines. He explained that he could never express a story in a more constructive way without knowing this process model.

Difficulties while constructing story:

The interviewee has faced a difficulty when writing the overall stories because having a procedural knowledge, he was not confident if the reader can understand the procedures through this story.

Recommendations for improvement:

He recommended to have a flowchart as the final story as it is easier to understand procedural knowledge through this flowchart.

CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.

(NURZAIRIN BINTI MUSTAFFA)